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MRS. CARL E. AKELEY IN ELEPHANT COUNTRY

Tusks 112 and 115 pounds respectively, the record tusks for the Mount Kenya region

". . . . We ventured forth to lead Bíbi to her prize, and a prize it proved to be, eleven feet and two inches high at the shoulders, tusks nineteen and a half inches in circumference, and eight feet ten inches long. . . . The record elephant for a woman and the record pair of tusks for a sportsman's license in British East Africa. . . . Our dusky followers in a weird chant, announced the success of the day, telling their comrades of how Bíbi had killed "tembo Kubwa." There within the glow of the camp fire Bíbi held court while with simple childlike enthusiasm, our little army of followers crowded around to offer their congratulations. . . . " — p. 336.

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ELEPHANT HUNTING ON MOUNT KENYA

A WOMAN WINS THE RECORD PAIR OF ELEPHANT TUSKS FOR A SPORTSMAN'S LICENSE IN BRITISH EAST AFRICA

By Carl E. Akeley

Illustrations from photographs by the Author

IN the past months we had hunted with but poor success in the dismal bamboo forests below the summit of Abadare. We had plodded up and down slippery leaf-strewn trails worn in places by the passing of generations of elephants into giant stairways, the steps of which could be easily managed by elephants, by even a toddling youngster of only half a ton weight, but which to puny man were exceedingly difficult of negotiation, even with the helping hand of a companion or the aid of a projecting root or convenient bamboo.

We had been enticed back and forth through the icy waters of mountain streams, Bíbi[1] carried on the shoulders of stalwart natives. We had bivouacked many a dark night on the trail around a blazing fire of dead bamboo. At a little distance on one side always blazed another fire where the Masai trackers and Kikuyu guide, stripped to the waist, prepared their food. On the other side still a third fire crackled in the midst of a busy group of gun-bearers and porters, Swahili, Myamwezi, Kamba and Baganda. Under such conditions Bíbi snugly rolled in her blankets fell asleep

[1] Bíbi, pronounced as though spelled "Beebe," is Swahili for "woman" and the name by which Mrs. Akeley was known among the native members of the expedition.

to be awakened at early dawn by the distant trumpeting of elephants.

Many another night we had forgotten disappointment and weariness in a comfortable camp, perhaps lulled to sleep despite the cries of hyenas and the coughing of leopards which gathered about the camp, by the patter of raindrops on the tent.

Now at sundown of the third day on the trail of an old bull elephant, we came out of the bamboos, up on the heather-clad summit of Abadare Mountain. The spoor here led us along a migration path, a path over which countless thousands of elephants must have passed in their migrations from one feeding ground to another, for in places the solid rock was worn to a depth of several inches.

We were greatly discouraged and camped beside the trail. The little firewood that we were able to collect was so wet that it required a forced draught to keep it alight and after preparing our supper the fire was allowed to die down; and Bíbi slept with nothing but her blankets to protect her from the rain and frost.

When in the morning we had emerged from our chrysalids of icy blankets, thawed ourselves out and were preparing to start on our return journey, the sun broke through and dispelled the mists, disclosing to our view a scene which held us spellbound; from our feet, down between the glistening slopes of a bamboo-clad valley, on and across a billowy sea of fleecy clouds, to the rugged, rocky, snow-clad peaks of Mount Kenya, our gaze roamed and lingered.

Many times during the past months had we seen this beautiful mountain and from many points, but never so close, and never had it so impressed us. We knew of it as a land of promise to the elephant hunter, but it was forbidden ground, and we little dreamed that it would ever be for us to try our fortunes within the domains of this snow-mantled goddess of the Equator. We turned wearily to retrace our steps campwards, determined to strike into the mountains farther to the north.

We were off bright and early on the following morning to the Government Boma at Nyeri, along the summit of the Abadare, down into the moss and creeper-draped forest of the lower levels, and out into the open hill country of the Wakikuyu.

When at Boma however, we received information which gave us a new hope. Instead of going back into the mountains, we made a two-day march to Fort Hall where to our great delight, we received permission to hunt elephants on Mount Kenya.

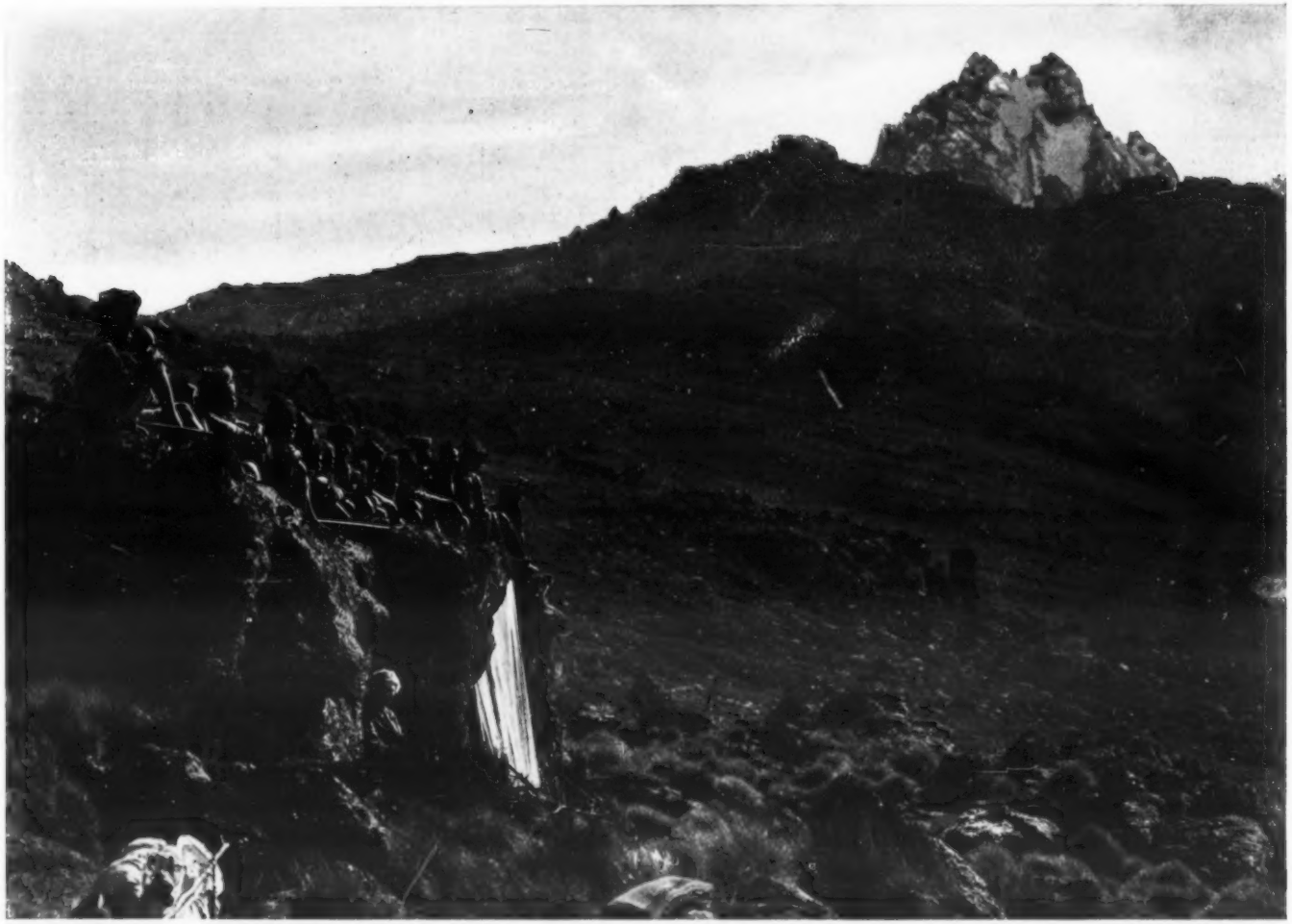
We went from Fort Hall to the base of Kenya, through the thickly populated country of the Wakikuyu, where no white woman had passed before, which until within a few months had been unsafe for a white man. The first sign of our quarry was a field of sweet potatoes which had been "harvested" by elephants the night before. Bíbi remained at first with the main camp at the edge of the forest. The remainder of the expedition spent many days in locating the feeding grounds of the elephants in the primitive forest and in the bamboo jungle farther up the mountain side; and two exciting days with a herd of elephants in jungle so dense that we could almost touch, but scarcely see them, finally killing two bulls, one a "charger" who gave us no choice but to kill or be killed. All this however I shall pass over, for this is to be the story of Bíbi's hunt.

Finally we sent a message bidding Bíbi come; with the keenness of an old campaigner she brought the safari to the

Sounds of elephants in the jungle enticed the hunters back and forth through icy streams, Mrs. Akeley carried on the shoulders of stalwart natives

Cunningham at work on an elephant skin in the Kenya forest. At this time he was having his first experience as an expedition guide, but is now well known for his professional work as safari manager for the Roosevelt and other important expeditions

THE AKELEY EXPEDITION MAKING CAMP



ABOVE TIMBER LINE ON MOUNT KENYA

About 15,000 feet altitude; two hours from the top of the ridge seen in the distance. Fresh tracks of elephants were found at this elevation. Mrs. Akeley is in the foreground at the base of the large rock

appointed place in the forest. Having exhausted my sportsman privileges so far as bulls were concerned, the only chance of adding a needed fine male elephant to the collection was through Bíbi.

A bad start was made on this occasion: the two highly perfumed Kikuyu guides ran us around in circles, while the ten porters carrying camp equipment and rations for four days, contributed to the annoyance and delay by continually falling behind and losing themselves in the jungle. About noon we came to a fresh trail, not of elephant, but of our own making where we had passed three hours before. Considerable valuable time was then devoted to sitting on a log while the Swahili interpreter cursed the guides in Swahili, Kikuyu, and several other dialects, and the gun-bearers rounded up the porters, after which we administered a fine of a week's wages all around, put the guides in the rear and struck a course due northwest, by compass.

The guides came up at regular intervals with the protest that if we continued in that direction, we would come to a stream, crossing which would land us in the country of a hostile tribe and we would be promptly annihilated. We continued on however until dark without reaching the dead-line or finding spoor fresh enough to tempt us away from our course. This course had led us through the more open ground of the timber belt which lies between the shambas (cultivated fields) and the bamboo forests. It was here that we hoped to cross the spoor of elephants where they had passed from one to the other of these, their two favorite feeding grounds.

We made our camp beside a great fallen tree whose dry top afforded a good supply of firewood; water was brought from a hundred yards down the slope where an ice-cold rivulet had found a bed in the sombre shade of great ebony-stalked tree-ferns. Amidst such scenes as these the weariness and disappointments of a hard day of fruitless hunting become as but the memory of an unpleasant dream, and by the time camp is made and tired limbs are stretched before the fire, we are longing for the morning, that we may be off again, away through the great, mysterious forest, forgetting at times, as we go, the main object of our search, lost in admiration of the weird and sombre vistas, brightened here and there by festoons of flowering vines or the crimson flash of a plantain-eater's wings. As we travel along through the forest gloom, silently, in harmony with our surroundings, we may be startled from our reveries by the hoarse leopard-like bark of an old Colobus monkey, followed by the wild reckless rush of the whole troop as they make for the topmost branches of some great forest tree. There they sit motionless, invisible, although in plain view, their white plumed tails waving gently in the breeze, midst waving streamers of moss.

Guided by the compass, we had traveled less than an hour next morning when we came to the spoor of an old bull, where he had been mooning about, feeding, during the night. Following it, we soon became lo t in a maze of tracks which seemed to indicate that not only one but three or four old fellows had spent the night in and about the somewhat open forest in which we now found ourselves.

For a long time we puzzled about on these tracks trying to strike a lead, but more often than not coming back to a familiar spot. Then we would strike off and pick up the spoor in a new place only to be led back to the unsolvable network of tracks again. At one

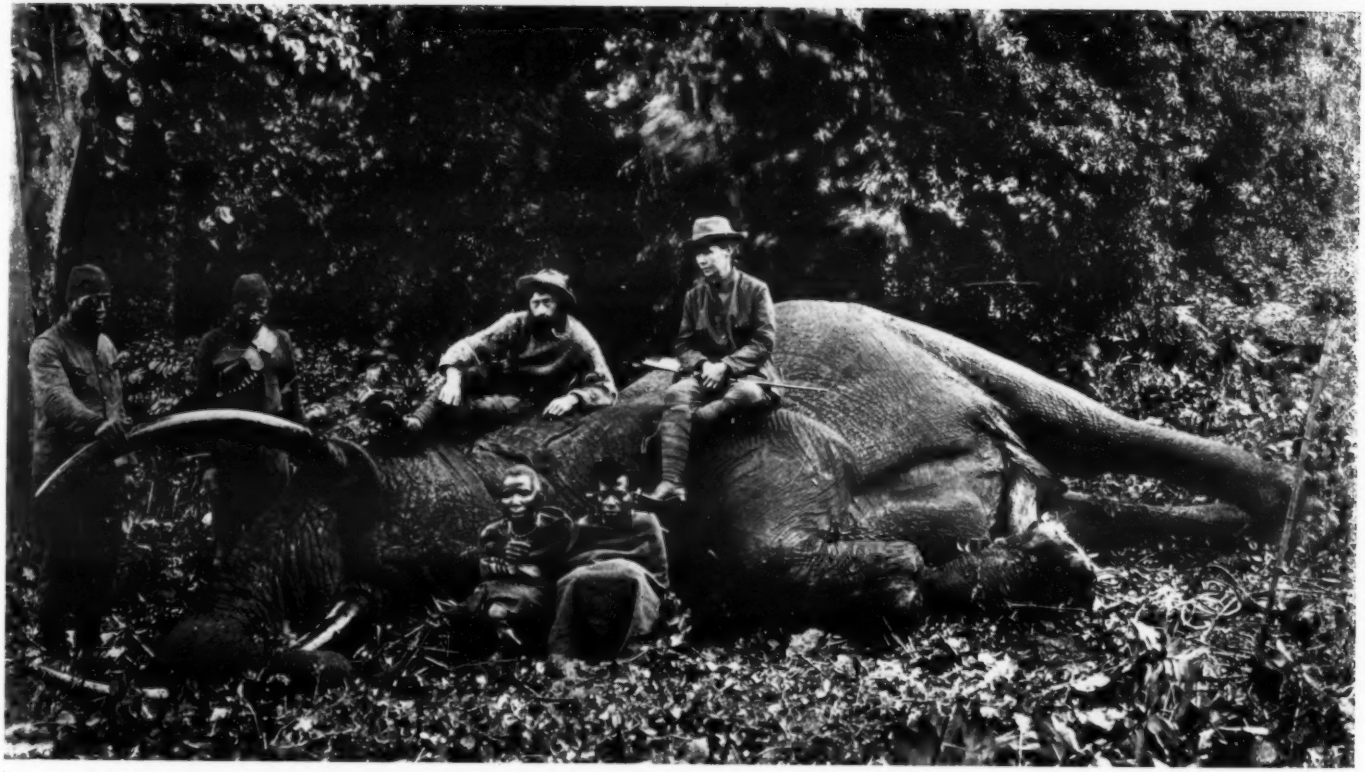
place the "big one" had lain down (an unusual act for an elephant) flat on his side, the imprint of his great body, head and tusks being clearly outlined on the soft earth, while the zone of flattened vegetation marked the reach of his proboscis.

The game of blind man's-buff continued until we were well-nigh discouraged; for roaming about in this way, we were in constant peril of getting to the windward of the animals who would then move away and leave us far behind — before we would discover what had happened. At last as we were working about in scattered formation, trying to solve the puzzle, one of the Kikuyu guides came scuttling back to us with distorted features and frenzied gesticulations. We promptly dropped to a kneeling position as a signal to the porters behind us, who noiselessly deposited their loads and themselves about the base of a tree. We crept carefully forward to the second Kikuyu, who had remained on guard and now stood with his eyes riveted to some object beyond a clump of dense high bush. As we approached him there dawned upon our vision, through the mist, the indistinct outline of the great rounded back of a "big un." He was feeding, quite unconscious of approaching danger, as he moved leisurely along a few steps at a time, reaching this way and that with his trunk, breaking off choice bits of food. There was little time for contemplation of the picturesque however, for the wind was shifty and he was working dangerously near to the concealed porters. He might at any moment crash away without giving us a view of his ivory, the size of which might be an important factor in the determination of his fate.

With Bíbi in the choice of positions, we crept carefully forward behind the low-hanging branches of a vine-draped tree to within forty feet of where the giant stood. Breathlessly we waited until, as he moved slowly forward, there came into view a splendid pair of tusks followed by the massive head and great flapping ears of the best elephant we had seen. What a monster he looked as Bíbi raised her rifle and with steady aim, placed a bullet in just the right place. As he collapsed two more like messages were despatched and a few minutes later, Bíbi stood beside the prostrate form of her prize. He was a fine specimen, standing ten feet and ten inches high at the shoulders and carrying one hundred and eighty pounds of ivory.

We promptly decided to preserve the skin for mounting. A series of photographs, sketches and measurements necessary in mounting were then made. The guides were sent back to the main camp to bring up additional porters with a full camp equipment; and the operation of removing a two-thousand-pound skin was begun. To preserve an elephant skin is no easy task, even under the most favorable conditions, and especially is it difficult in a dense forest on a mountain side in the interior of Africa. The skin must be put in shape to be carried by native porters down through the mountain forests and jungles, many miles, on through the open hill-country to the plains, and then a hundred miles farther, to the railway. We began our task at twelve o'clock, noon, and we worked without stopping even for food until four o'clock, next morning. The skin was then off, in three parts, lying on the cool, damp ground, and the carcass was left to the scavengers — natives, leopards, hyenas and the smaller carnivorous animals.

When we returned to our work next morning, it was apparent that the hungry



MRS. AKELEY'S FIRST TUSKER

This specimen is now to be seen as the large bull in the elephant group in the Field Museum, Chicago. The tusks weigh 93 and 95 pounds

ones had all been there for their portion, and on following one of the many trails which radiated in all directions through the jungle, we found several huge pieces of flesh where the leopards had concealed them for future reference.

The news of a kill spreads rapidly among the native Wandorobo hunters and in a short time they had gathered from all quarters. Little camps of men, women and children, were scattered all about the place, while over each fire festoons of elephant "biltong" were being cured for the future. The killing of an elephant is a blessing to these poor wretches.

Finally six days had passed, six days of exhausting, disagreeable work; but the skin, reduced by shaving to half its original weight, and thoroughly salted, had been made into three oblong packages and firmly lashed to long poles, ready for the porters, four or more for each load, to begin their heart-breaking journey out of the forest. All in camp were now in good spirits for the worst of the work was past; the sick had recovered — there had been much illness in camp during the week, and everyone was keen to be on the hunt again.

The guides and gun-bearers had been sent out to determine, if possible, whether or not there were elephants in the vicinity. There still remained the cow to be secured, and Bíbi was entitled to another bull — if she could get him. Before noon the gun-bearers returned to report that they had found a herd only two hours from camp.

For an hour and a half we followed our guides along well-defined trails through the heavy timber, where there was a minimum of undergrowth to impede our progress. When we came to the place where the herd had been seen we began beating about in an effort to locate a trail which would give some indication of the direction in which they had gone, but before we had succeeded in this, a squeal of fright and a mighty crash warned us that the honor of discovery belonged with the elephants. We had unwittingly given them the wind and they were off. We had every reason to hope that they would not go far before settling down again, as these elephants have had but little experience with the terrible white man and his weapons.

As they were scattered about feeding, at the time they took alarm, it required some little time to pick up the main trail where they had moved off in a body, but within a half hour we were within hearing distance of them, and the occasional crack of a breaking branch told us that they were quietly feeding again. The wind being favorable, we worked carefully forward, until when nearing their position, there was a sudden movement of the whole herd across our front, and the sudden apparition of the great rounded back of an elephant, ten paces in front, combined with the noise made in the hurried "get away" of a troup of Colobus monkeys in the tree tops above us, was sufficient to create the impression that we were surrounded by elephants. It was too much for Bíbi's overstrained nerves and she ran back a few steps, exclaiming under her breath, "They are coming!" Then, checking herself, she stood while the whole herd passed in front showing only the tops of their heads and backs above the high dense bushes. They had not detected our presence and all was well, provided Bíbi had not lost her "nerve," in which case we would have to give up the hunt. Had we not been screened from sight of the elephants when she ran, the move might have led to disaster. None realized this more keenly than did Bíbi herself, but when the question of giving up was put to her,

she had regained her self-control and was determined to go on.

The last move of the herd had put us in danger of being betrayed by the wind again, which made it necessary to act quickly. We worked around to head them off where they had come to a stand in a thick bit of wood whose outer edge was a dense impenetrable mass of greenery. This screen effectively concealed us as we cautiously threaded our way along an overgrown trail, using the utmost precaution to avoid the cracking of twigs or scraping of harsh leaves against our clothing. We were very close to the elephants and the slightest sound might be detected by their keenly sensitive ears. They were perfectly quiet, except for the occasional rumble of a stomach, which indicated peace and unconcern on their part. It was jumpy work, creeping along at a snail's pace, where the slightest misstep might cause the stampede of a herd of elephants, who would be quite as likely to come our way as any other. The screen impenetrable to us would be no barrier to their huge bulk. At last we came to a more open path beneath the larger trees that sheltered them, and as we worked carefully along, we could see here and there, patches of rough barklike skin. A youngster about four feet high was to be seen toddling about on an independent excursion, amongst the legs of his elders.

Now that we had succeeded in placing ourselves among them, our work was cut out. We were to get a cow if possible. Before shooting we must make certain that the specimen chosen was a cow; moreover that it was a good one, such as would properly represent the species; not an easy task in such dense cover. As we stalked stealthily along the line we received a number of thrills. A bull whose suspicions were aroused, stood head on with his great ears thrown forward, listening, his trunk thrown forward and up "feeling for wind." Another old fellow walked out to the path on which we stood, only a few yards away, deliberated a few moments, and to our great relief decided to go down the path, away from us. At such times we dared not stir, for elephants are quick to detect moving objects.

We followed down the path, in the wake of the bull who was moving away, in search of the coveted cow, but we had gone but a short distance when we were stopped by one of the gun-bearers who declared in sign language, that we had passed an elephant with ivory as large as a man's thigh. We retraced our steps somewhat reluctantly to the place from where we could see the elephant which had previously shown signs of suspicion, and there, just behind and towering high above him stood a lordly fellow who until now had escaped our notice. We got a glimpse of the upper part of one tusk and it seemed very large in diameter; but that was not enough, we must determine its length, and if it had a mate. Much of the largest ivory is that of single tuskers. After a time, by dint of stooping low and peering beneath the bushes, we saw as the elephant stepped forward a pace, the tip of a tusk within fifteen inches of the ground. From that lofty head to within fifteen inches of the ground certainly meant a big tusk — good enough even though it had no mate. This decision was scarcely reached when a turn of his head revealed to us the tip of its mate, of the same length.

Excitement ran high. It was the big pair that we had often seen in our "pipe dreams." Bíbi prepared to take the shot, with the understanding that when she had fired we would run down the path to the protection of a clump of

Tree trunk in the Kenya jungle polished by elephants

Mrs. Akeley and Cunningham, with the Kenya record elephant shot by Mrs. Akeley. This elephant stood eleven feet two inches high at the shoulders and carried tusks weighing 112 and 115 pounds

large trees, for it seemed quite probable that the inevitable stampede would be in our direction.

Bíbi was none too soon with her preparations for attack and retreat. Although up to this time the big one had been protected by the body of the nervous member, the latter now scenting danger, wheeled around, exposing for an instant, the ear of the big one ere he had time to follow the lead. His head was raised, ready for the rush when Bíbi's gun sent forth its message, and as he quivered and drooped two more shots followed and with Bíbi we made a dash for the protection of the trees.

After the first crash of the herd's departure all was still, and for a time we were uncertain as to whether they had gone or had stopped — with the possible intention of returning to investigate — in which case we would likely have a very busy time of it. They had gone however, covering their retreat with that

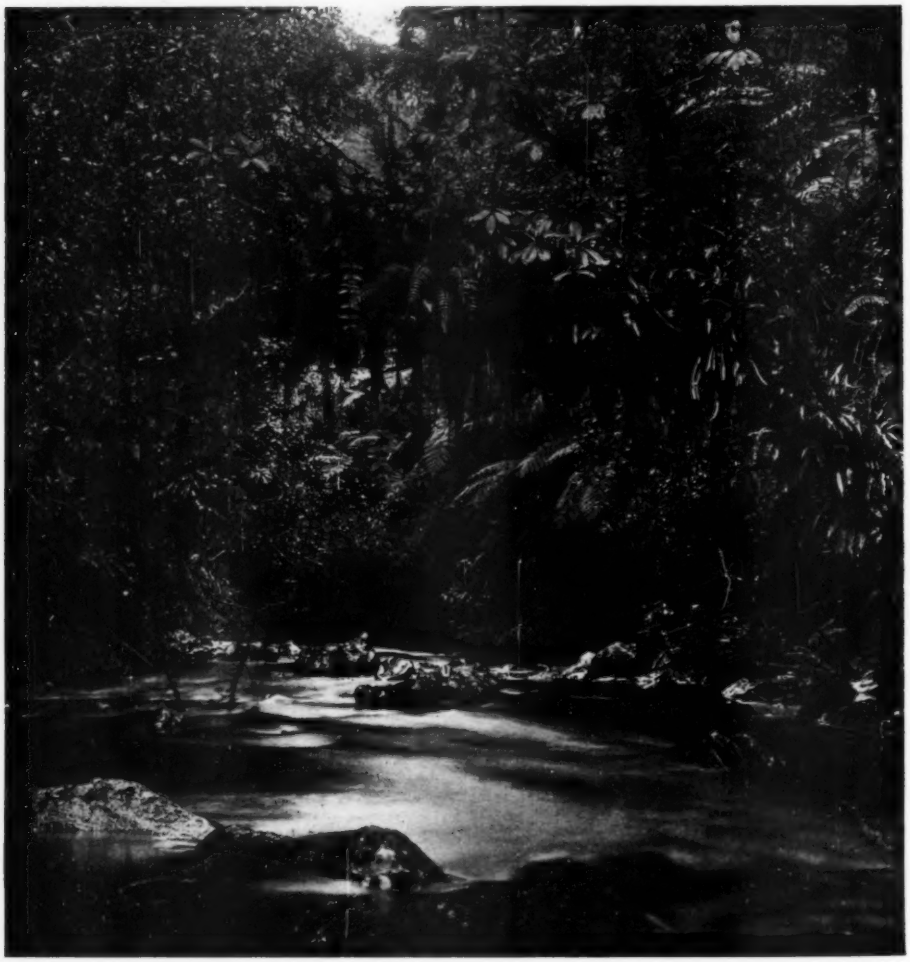
"The Christening." — An Abyssinian custom among elephant hunters requires that the cone of jelly-like pulp in the base of the tusk be drawn out, its tip cut, and a cross marked with the blood on the forehead of the young hunter. Cunningham in his authority as an elephant hunter of long standing was master of ceremonies

ELEPHANTS IN THEIR NATIVE JUNGLE, BRITISH EAST AFRICA

marvelous silence which often attends their movements when frightened.

After waiting and listening for a time we ventured forth to escort Bíbi to her prize, and a prize it proved to be, eleven feet and two inches high at the shoulders, tusks nineteen and a half inches in circumference, and eight feet ten inches long, right and left weighing, respectively one hundred and fifteen, and one hundred and twelve pounds. The record elephant for a woman, and with her first, the record pair for a sportsman's license in British East Africa.

After making a few hurried measurements and photographs, and detailing a guard of four porters to stay with the prize, we started back to camp. Bíbi will not soon forget that mad race against time to gain the shelter of camp ere darkness overtook us. As the last rays of the equatorial sun withdrew from Kenya's cold unresponsive summit, and daylight shrank from before the weird shadows and mysterious voices of the tropical forest night, we sighted the cheery fires of the camp. Our dusky followers in a weird chant, announced



In elephant country on Mount Kenya, at an elevation of 8000 feet in the heavy forest belt

Photo by DeWitt C. Ward

MRS. CARL E AKELEY, NEW YORK CITY, 1915

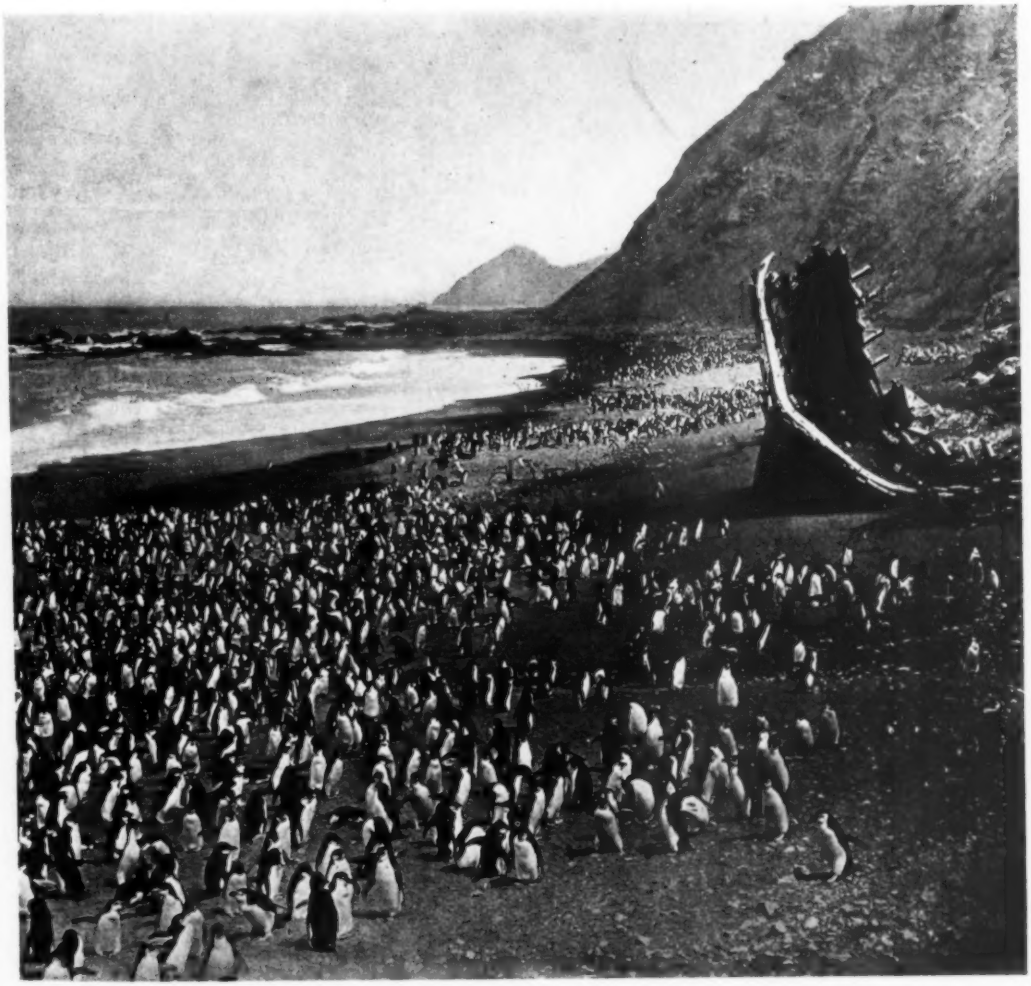
the success of the day, telling their comrades of how Bíbi had killed "tembo kubwa." There within the glow of the camp fire Bíbi held court while with simple childlike enthusiasm, our little army of followers crowded around to offer their congratulations.

Next morning we moved camp to a circular, turf-carpeted clearing, near to the fallen elephant, in order that we might care for our prize without a long trek to and from the camp. "Tembo Circus" as we called it, was the one bright, cheerful camping place of our whole elephant hunt. Here, while we continued the search for a cow elephant, Bíbi spent many days surrounded by the ever new, ever changing scenes of primitive life. The forest now sheltered dozens of camps of Wandorobo who had followed us hither to reap the harvest of the last kill. Every day little bands of natives came in from the shambas with offerings for the "Bíbi Mzungu," or to gossip with our followers. Diversion was also afforded by her little "zoo" which was stocked by the Wandorobo boys whose services she had enlisted. In the crude cages built by her boys, the monkeys, antelopes, and hyrax soon learned to know her, and to tell her stories of their lives in the unexplored depths of the forest.

Bíbi at "Tembo Circus" with a member of her "zoo." Tembo Circus near the spot where the record elephant was shot by Mrs. Akeley, was the camp of the Akeley expedition in 1906. Since that time this camping place has been used by Colonel Roosevelt and by Stewart Edward White and interesting mention is made of it in their African writings

REPRODUCTIONS OF PHOTOGRAPHS FROM THE WORK OF THE AUSTRALASIAN-ANTARCTIC EXPEDITION UNDER SIR DOUGLAS MAWSON

Selected from the one hundred and fifteen enlargements of Mawson photographs on exhibition at the American Museum. [The captions are quotations from Mawson's *The Home of the Blizzard*]



"THE NUGGETS" BEACH, MACQUARIE LAND

Royal penguins from rookeries on the hills come down in long processions each day to fish on the beach

Photographs reproduced through the courtesy of Mr. Lee Keedick of New York City, lecture manager for Sir Douglas Mawson

THE FLAGSHIP "AURORA" IN COMMONWEALTH BAY, ADÉLIE LAND

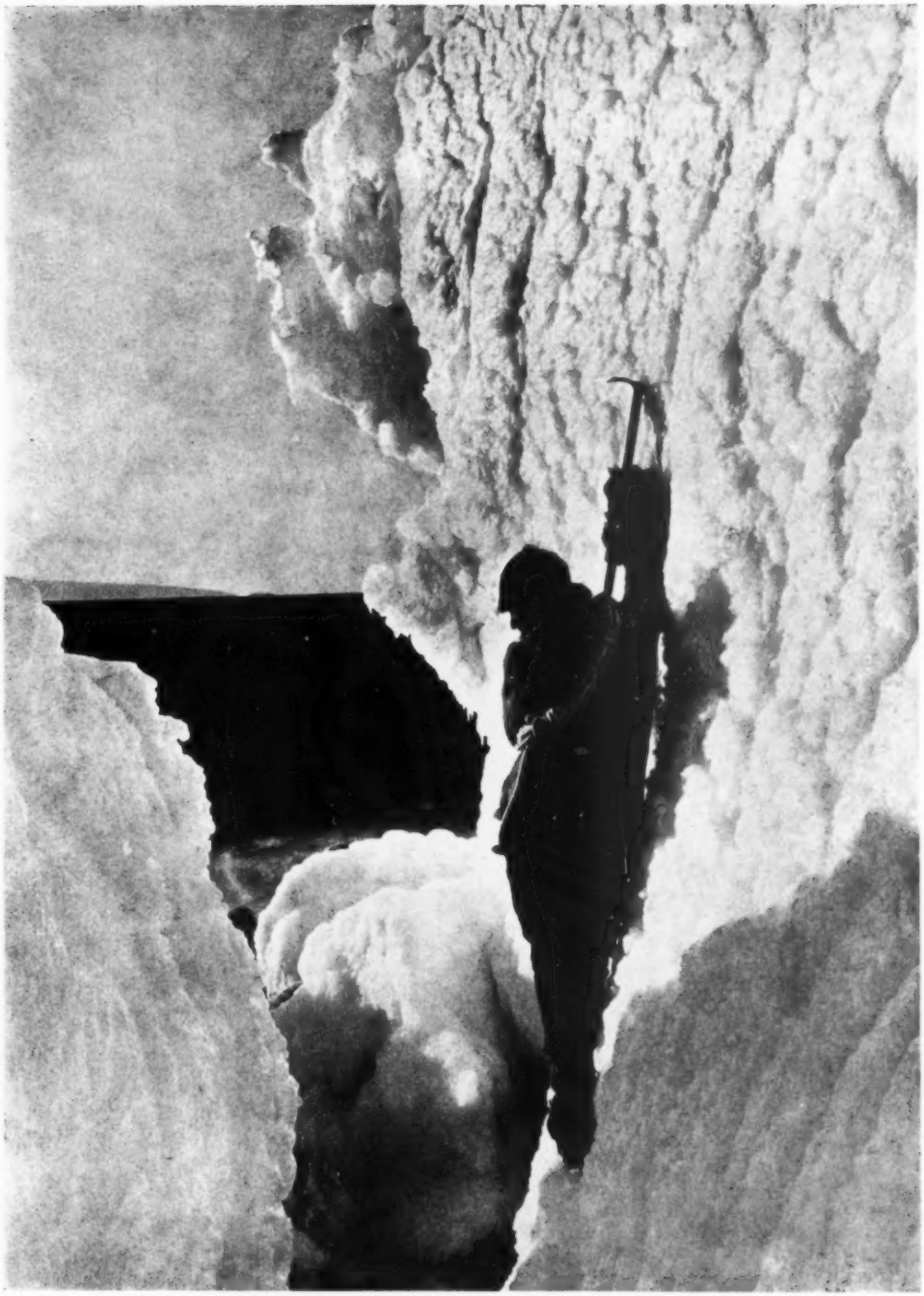
Here was established the main base under Sir Douglas Mawson, a center for sledge journeys over the unexplored glaciers and ice plateau. To-day Science is completely the basis of exploration. "The methods of Darwin were developed in the Challenger Expedition (1872)," and "the torch of the pure flame of Science was handed on" to the explorers of the new century

AN AFTERNOON SCENE IN ANTARCTICA

"Antarctica is a world of color, brilliant and intensely pure . . . the chaste whiteness of the snow, the velvet blackness of the rocks. . . . The widening spaces in the zenith are azure and low in the north they are emerald. . . . Far down in the south the sky is tinged with indigo and ultramarine, washed with royal purple paling into co'd violet and greyish blue . . . each reflected in the dull sheen of freezing sea. . . . Out on the infinite horizon float icebergs in a mirage of mobile gold. A cold picture—yet it awakens a throb of inborn divinity"

ON THE EDGE OF AN ICE RAVINE, ADÉLIE LAND

"The difficulties of exploration in cold regions approximate to the limit of human endurance and often enough exceed it." Bridges of soft snow over the crevasses of the glacier may give way, opening up gaping holes into the darkness of chasms below. " . . . I seemed to stand alone on the wide shores of the world. . . ."

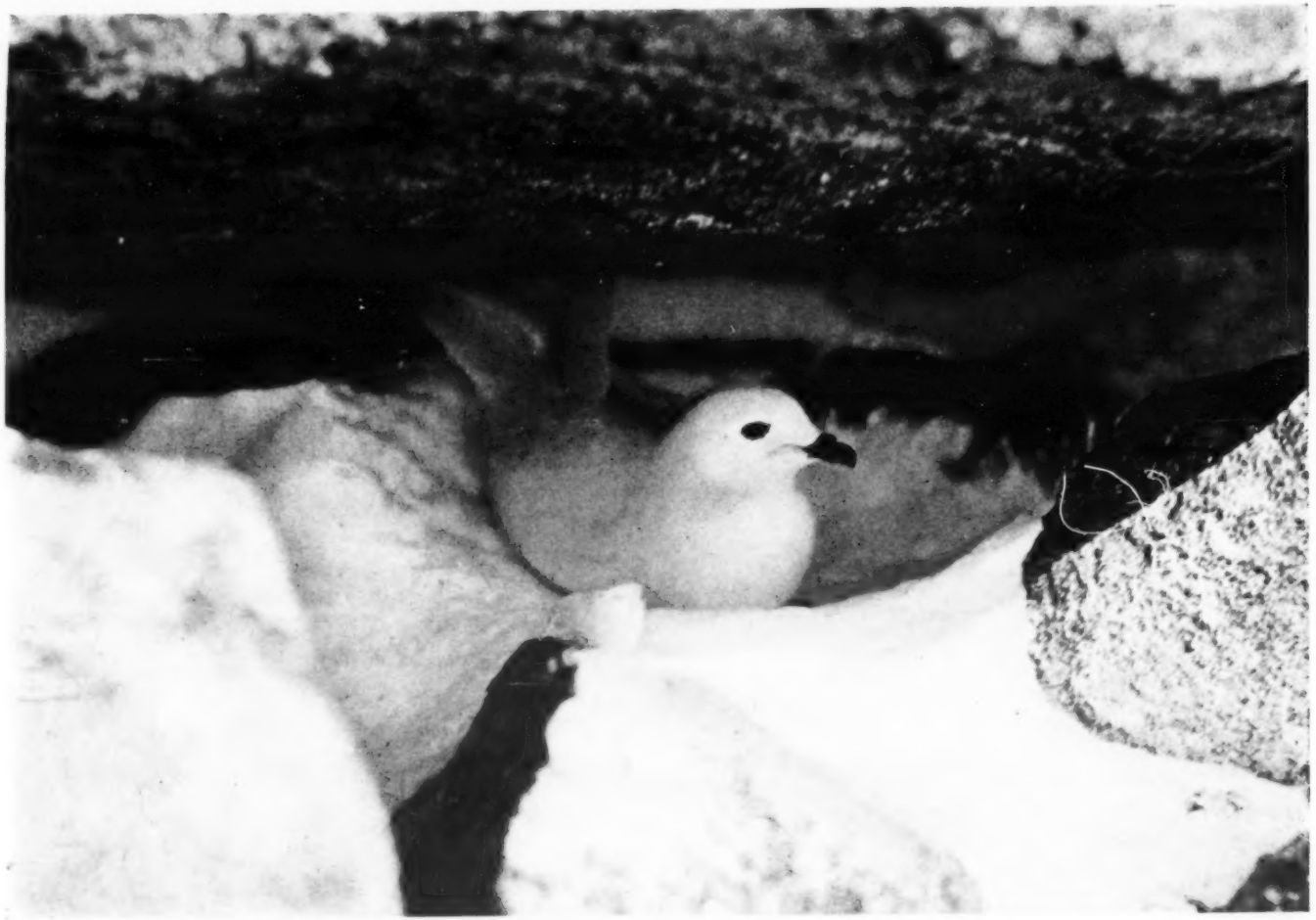


AN ICE CLIFF, ADÉLIE LAND

Walls of ice came down steeply to the sea, "floating extensions of land ice and glacier tongues, riven and distorted by gaping crevasses." "Adélie Land is so overwhelmed with ice that even at sea level the rock was entirely hidden. Here was a picture of Northern Europe during the 'Great Ice Age,' some 50,000 years ago"

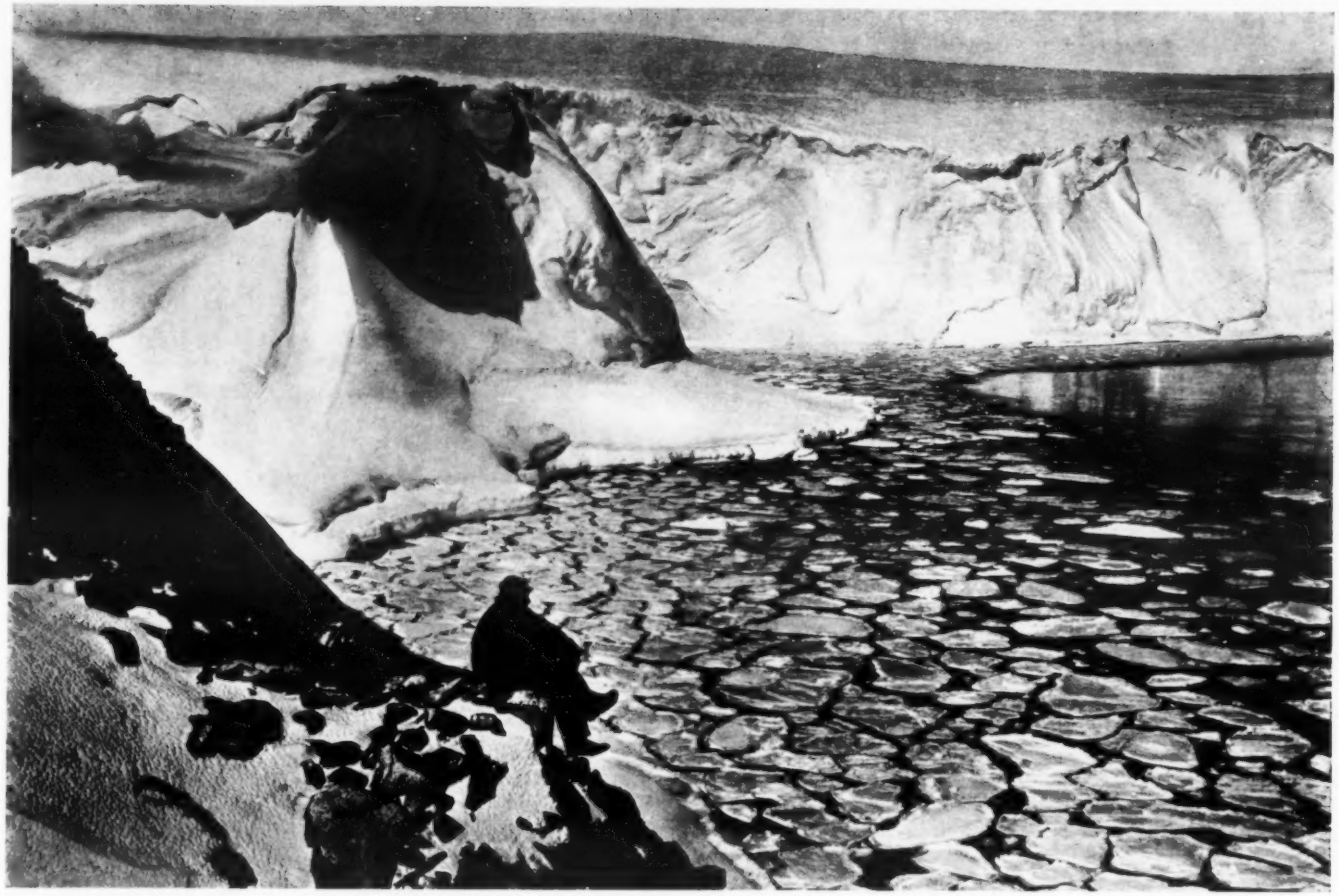
IN THE BLIZZARD, ADÉLIE LAND

"Any trace of elation felt at meteorological discovery could not compensate for the ever-present discomforts of life." "Picture the drift so dense that daylight comes through dully although it may be the sun shines in a cloudless sky. The drift is hurled screaming through space at a hundred miles an hour, the temperature is below zero . . . infuriated elements in the darkness of a polar night. . . ."



SNOW PETREL ON THE NEST, ADÉLIE LAND

During sledging journeys through crevassed blue ice, over ridges and past open chasms, occasionally a gentle snow petrel would follow us, circling above our heads. It was a splendid sight to watch the snow petrel in winds of fifty and seventy miles per hour, wheeling, swinging, sinking, and soaring, radiant with life—the wild spirit of the tempest



LOTUS-FLOE UNDER THE ICE CLIFFS AT LAND'S END

"The vast solitary snow-land, cold white under the stars; lustrous in the radiance of the southern lights; furrowed beneath the icy sweep of the wind. We had come to probe its mystery, we had hoped to reduce it to terms of science, but there was always the 'indefinable' which held aloof, yet riveted our souls." "One is in the midst of infinities—the infinity . . . of the time past since these things had birth, and the infinity of the time to come before they shall have fulfilled the Purpose for which they were created"

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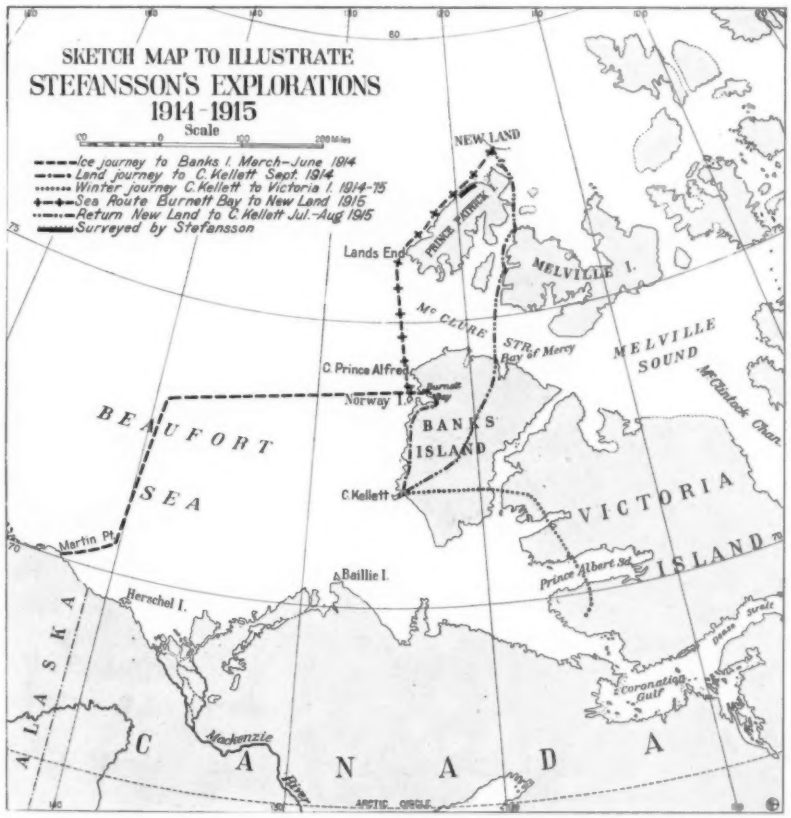
THE STEFÁNSSON EXPEDITION OF 1913 TO 1915

By Major General A. W. Greely, United States Army

THE history of polar expeditions equals, relatively speaking, that of any other phase of exploration in its romantic episodes of unexpected and thrilling character. The retreat of Dr. Elisha Kent Kane across Melville Bay, the ice-drift of Captain George E. Tyson of eighteen hundred miles, the boat journey of Admiral George T. Melville to the Lena Delta, and the rescue of the shipwrecked American whalers at Point Barrow by Lieutenants D. H. Jarvis and E. P. Bertholf, are marvelous successes of American adventurers which every red-blooded individual reads with rapt attention and stirred emotions. It seems surprising that those who control the development of the minds of the rising generation do not supplant trashy and



Courtesy of the American Geographical Society

The new land in 77° 43′ N. latitude and 115° 43′ W. longitude, was discovered on June 18, 1915. It was explored for three days only and through one hundred miles of coast only, but from an elevation of 2000 feet twenty miles inland, mountains were seen at least fifty miles farther in all directions to the north and east (the land was low to the west).

The route traveled as shown on the map is of course generalized and the distances fall far short of the actual distances covered, which were made longer and indirect because of drift due to contrary winds and currents

debasing fiction by tales which tell of man's control and courage while facing actual and desperate conditions.

To these wonderful victories of peace over the elements of nature, is now added the story of the hazardous sledge-journey, the successful endurance, the wonderful resourcefulness and the final discovery of hitherto unknown land by Vilhjálmur Stefánsson.

The trustees and members of the American Museum of Natural History are especially interested in the success of Stefánsson in his polar expedition of 1913–15. Under the auspices of the American Museum, Stefánsson scientifically explored the Canadian shores of Arctic America, in 1906–07 and 1908–12. The American Museum in conjunction with the National Geographic Society financed at first the present expedition, from which the two societies withdrew in favor of Canada when the Dominion Government expressed its desire to outfit and control the expedition.

Three objective points were in view: the discovery of the land predicted by Greely and by Harris to the northwest of Banks Land; the completion of the charting of the unvisited northern coasts of Victoria Island and of Prince Patrick Island; and the geological, anthropological and biological exploration of the coasts east of the Mackenzie River. The first work was to be done with the "Karluk," the largest ship. She was beset however, off the northeastern coast of Alaska in August 1913, and later, driven by violent gales, she drifted northwest to 73° N. latitude, 164° W. longitude, and thence to the southwest, sinking from ice-pressures January 11, 1914.

Fortunately Stefánsson was ashore hunting when the "Karluk" began her drift. With his largest ship gone, his force largely diminished and his main supplies lost, he faced conditions which would have seemed hopeless to a man of weaker fibre. His courage never failed nor was his purpose shaken. What he had planned to do by ship and sledge was now to be done by sledge alone, as far as geographical work was concerned. Dr. R. M. Anderson was given his ship for the scientific work in the Mackenzie region, while Stefánsson bent his energies to his sledge journey, which necessarily was to be northward over the rough ice of that portion of the Arctic Ocean, known as Beaufort Sea. A supporting sledge accompanied him in March, 1914 to the Continental Shelf, located in about 70° 20′ N. latitude, 140° 30′ W. longitude.

On April 7, 1914, Stefánsson started north, with Anderson and Storkersen, six dogs, 360 rounds of ammunition and food for about forty days. Such a journey would seem to the ordinary man as certain of failure, but Stefánsson well knew the methods of sea-floe life and the possibility of living on game. He was destined to have his courage, skill and determination put to the severest tests. Violent gales, enormous pressure ridges, and absence of game were experienced until on April 27 he was forced to alter his course. He was then in 73° N. latitude, 140° W. longitude, about two hundred and fifty miles of travel from the Alaskan coast. He was in the middle of Beaufort Sea, which although ice-clad showed the effects of the spring sun by its disintegrating floes. He decided to go to the northwest point of Banks Land, about three hundred miles distant. On May 5 his kerosene was gone, and he was barely able for days to melt with lard (carried to oil the boat tarpaulin) enough floe-ice to quench thirst. Ten days later Stefánsson saw the first seal, and the nerve of the hunter was shown by his killing it with a brain shot at three hundred yards. On May 24 when

within forty-five miles of Banks Land a violent southeasterly gale, of twelve days duration, sent the party seaward to a point one hundred and five miles from shore. Stefánsson took matters philosophically, as he was on a floe over one hundred feet thick. Devoting energies to hunting the men accumulated two tons of meat against emergencies. It was not until June 26, that they set foot on land sixty miles south of Cape Albert. For ninety-six days they had lived on the moving ice-pack.

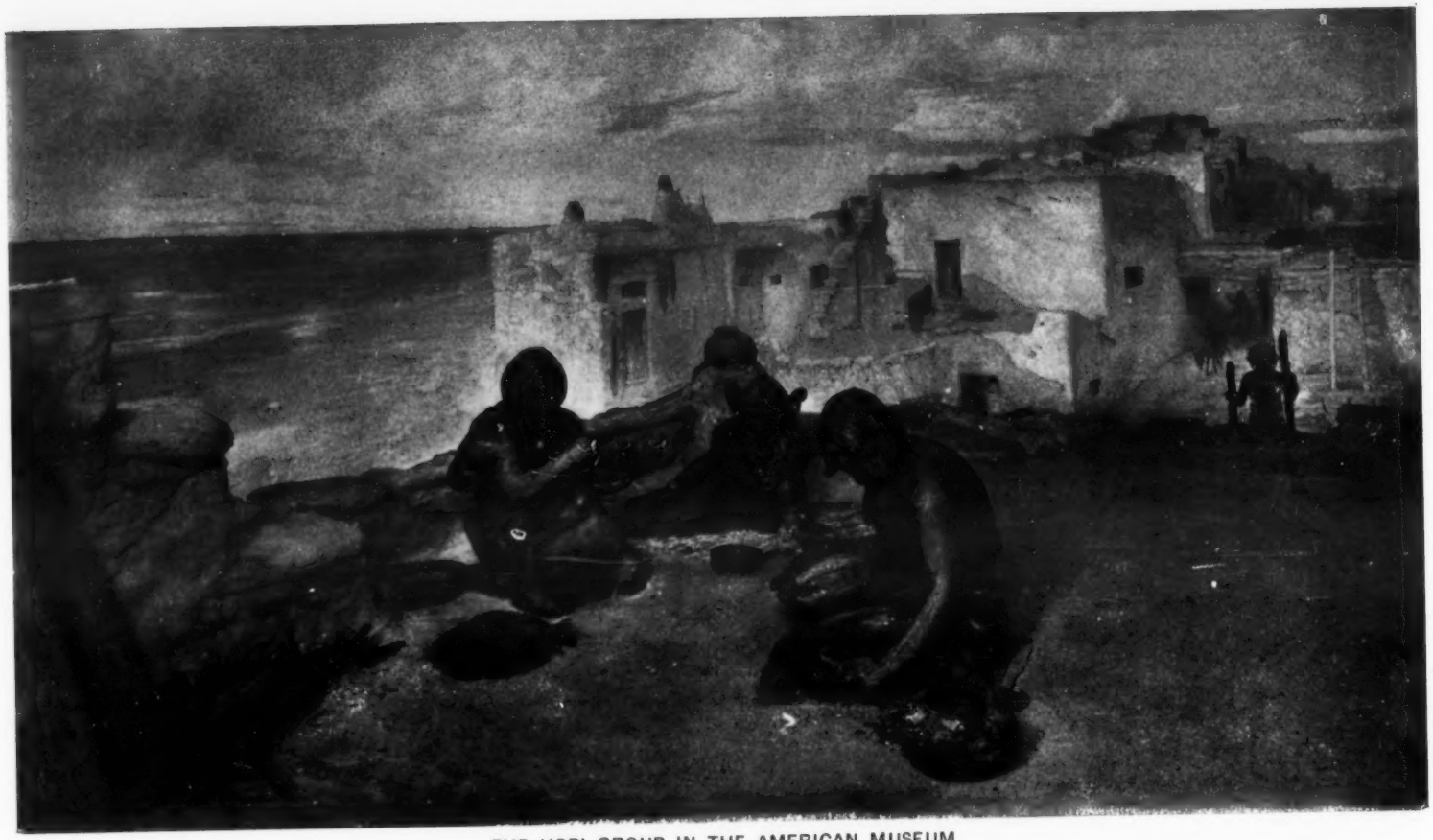
They summered on Banks Land, killing thirty-nine caribou and storing up supplies against any mischance. Despairing of the arrival of either of their two ships, they started south in September with packs, and found the "Mary Sachs" already in winter quarters, although as Stefánsson reports "the sea was absolutely clear of ice." Neither of his ships obeyed orders and Stefánsson's safety was the result of his own efforts — the excuse being that they thought he had perished. As Stefánsson had been absent seventeen months there were some grounds for such belief.

Accidents prevented Stefánsson taking the field again effectively until April 5, 1915. Then he was delayed by a southwesterly drift of twenty-four miles in his effort to explore the sea to the northwest of Banks Land, and was forced to turn back from 76° 40′ N. latitude, about seventy-five miles offshore. After charting the unknown parts of the north coast of Prince Patrick Island the party discovered in June a new land, whereon they landed on the nineteenth. As far as seen, the land covers an area of about five thousand square miles, is rugged and mountainous, and its southern shore trends from west by north to east by south. About one hundred miles of coast were covered during three days of travel. The only point astronomically determined was in 77° 43′ N. latitude, 115° 43′ W. longitude. It is interesting to note that this land is but some fifty miles distant from the farthest point reached on Prince Patrick Island by McClintock in 1853.

Stefánsson considers that the new land is one of considerable extent. It is situated about one hundred miles to the west of the Ringnes Land, discovered by the Sverdrup expedition in 1901. It thus extends some ten degrees of longitude to the westward of that polar archipelago (west of northern Greenland), fringing the great frozen Arctic Ocean, of which the most easterly island is Grinnell Land; the most westerly known is the new land of Stefánsson.

It is most probable that Stefánsson's Land extends far westward, or northwestward, in the shape of an island with probably a low-lying area of large size whereon are formed the great floe-bergs of which Stefánsson saw many in the course of his sledge trip over Beaufort Sea in 1914. It is worthy of note that in all his periods of danger and of distress Stefánsson kept up his observations. His soundings are of special value as indications of land and sea distribution. While the Continental Shelf of eastern Alaska is about seventy miles offshore, Stefánsson's soundings prove that it closely fringes the west coast of Banks Land. While this is not conclusive, yet it apparently indicates that the unknown lands lie rather to the northwest of Banks Land and Prince Patrick Island.

In any event there is reason soon to expect definite information on this point, as Stefánsson sailed from Herschel Island August 23, and northward from Cape Kellett September 3 to carry on further explorations. Meanwhile the world awaits his further report, with confidence that it will materially reduce the vast area of unknown regions which has hitherto disfigured the charts of the North-polar Circle.



THE HOPI GROUP IN THE AMERICAN MUSEUM

Designed by Howard McCormick with the coöperation of Mahonri M. Young

Portion of Walpi, the five-story Pueblo village, or "house" as we should call it, lying in the open sunny land of the American Southwest. The observer looks out across the roof of a detached section of Walpi, where are Hopi Indians engaged in the ordinary routine of the daily life that one might see to-day at the real Walpi. The width of the group is about twenty-one feet, its depth twenty-six feet. The background canvas forty-two feet long was painted by Mr. McCormick.

The figures are by Mahonri M. Young. The woman on the left is making a basket with large coils, one of the well-known types of the first and second mesas. Her basket material is being kept moist by the covering of wet sand. The potter on the right is a fairly good portrait of Nompeyo, the most skilled of Hopi workers in clay. The small boy at the rear has climbed to the top of the ladder, the only means of entrance to a Walpi home

IN THE HOME OF THE HOPI INDIAN

"HUMAN HABITAT GROUP" CONSTRUCTED IN THE AMERICAN MUSEUM — IT GIVES A FEELING OF THE GREAT OPEN LANDSCAPES WHERE THE HOPI INDIAN LIVES — A SNAPSHOT OF TYPICAL HOPI PEOPLE PURSUING THE ROUTINE OF THEIR DAILY LIFE

By Clark Wissler

A NEW life-size Indian group has just been completed in an annex to the hall for the Southwest. It presents a scene among the Hopi of Arizona, one of the best known groups of Pueblo Indians. In general plan the construction is similar to the bird habitat groups which have long distinguished the Museum's exhibits. The original idea as to subject was to select a typical Pueblo village and then to reproduce as far as possible a representative section with the corresponding landscape.

In this case the choice of a type is not difficult, for the principal surviving villages, those of Hopi, Zuñi, Acoma, Laguna and Isleta, while marked by certain individualities are quite alike. This is particularly true of their outward or objective characteristics for they are laid out on the same general plan and show the same architectural lines. Further, they are in the same kind of country, the somewhat arid, sunny and highly picturesque land of the Southwest. The people also, show many similarities in dress and occupation and are to-day living very much as did their prehistoric ancestors. These villages are moreover of respectable antiquity, for several of them were described by the first Spanish explorers (1539–40) in terms that are recognizable to-day. No doubt many of the same houses in Acoma now, were standing when first viewed by Coronado, Alvarado and their followers, and no one knows for how many centuries before. Thus the final choice of a site for this group became merely a practical question, the site best adapted to the space and mechanical limitations. To our mind, this was the Hopi village of Walpi.

The administrative responsibility for the group was accepted by Dr. Pliny E. Goddard who commissioned the artist, Howard McCormick, to design and execute it with the help of the sculptor, Mahonri M. Young. When the design had been approved by the Museum, Messrs. McCormick and Young went to Walpi where they spent a summer making the necessary sketches, color studies and figure modeling.

The near village in the canvas background is Walpi as seen from the south while beyond in the distance is its neighbor, Sichumovi. It may be noted that the Hopi villages are in three groups because they occupy three separate stretches of elevated land, or mesas. These mesas are designated as the first or eastern, the second or middle, and the third or western mesa. On the first mesa are Walpi, Sichumovi and Hano, Walpi occupying the southern end or point.

To the left of Walpi on the canvas appears the second mesa, where the contour is broken by a cañon, through which the lowering rays of the afternoon sun stream in a striking way. To the right are the lowlands in which the Hopi fields are laid out, the artist having indicated the growing corn.

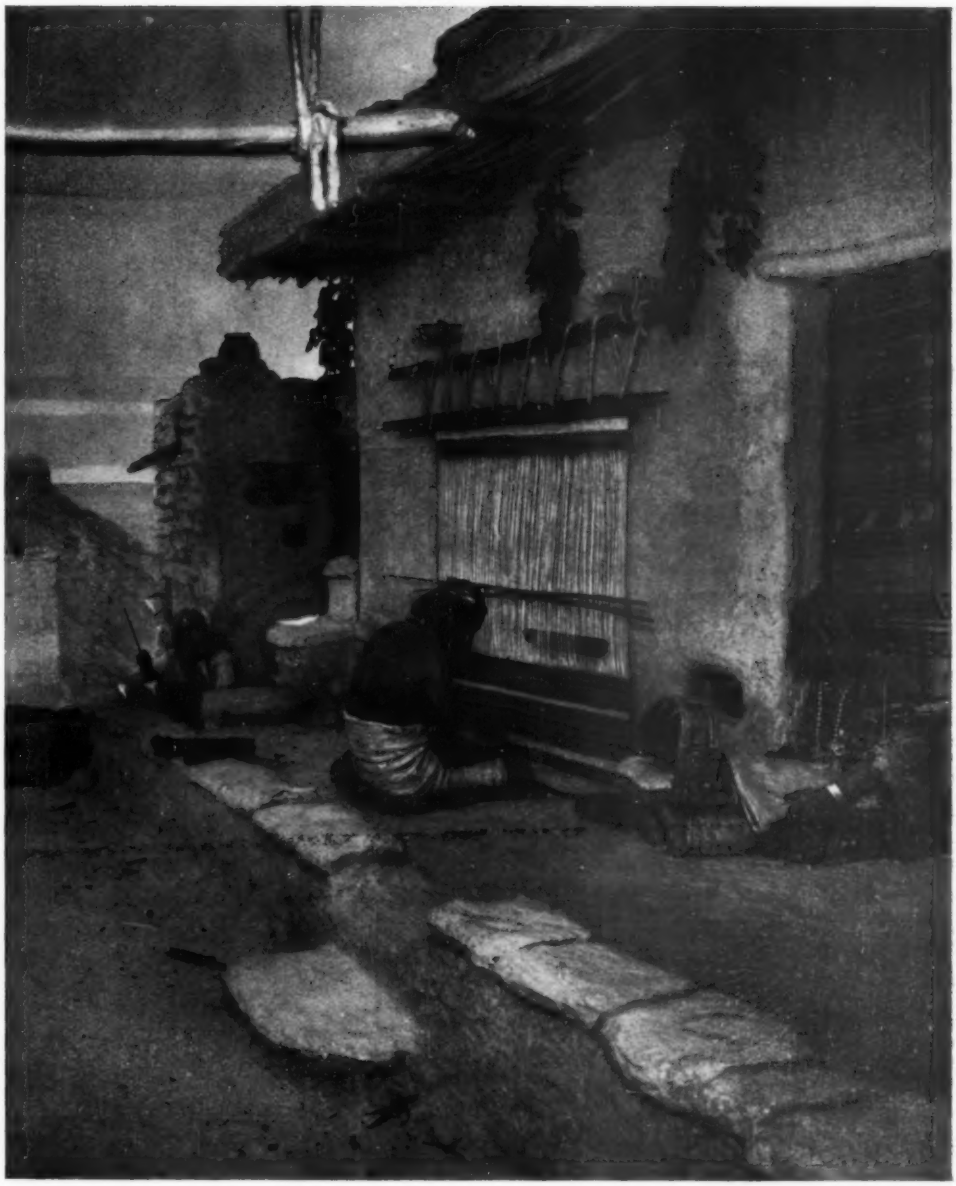
In the foreground is an outlying or

detached portion of Walpi cut off by a small ravine. It is in this small detached group of houses that the visitor stands. He looks out across the roof of the first tier of houses just as he would from the doorway of a second tier house, past an angling portion of the same tier across the valley, or arroyo, into Walpi. Immediately before him, as if he were in their midst, are representative Hopi people pursuing the routine of their daily toil. Thus, in the group as a whole, we get a veritable snapshot of Hopi life, precisely what one might see in a glance through a village. It was not designed to force into the composition many phases of life not usually seen in juxtaposition, but to present one of the commonest scenes of prosaic life. It was not our aim to instruct the visitor in details, such as how cloth is made, how houses are built, the whole life history of a clay pot from the grinding of the clay to the firing, and the like — all subjects far better treated in the exhibition cases of the hall — but to give a concrete idea of Hopi life in its native setting. In a way, the production is a human habitat group, analogous to bird and mammal habitat groups.

In composition the artists have projected the group as a whole. To this end the objects in the foreground are adjusted to the same perspective lines as the canvas. Had the primary aim been to show a Hopi house, it would have been constructed on its own lines, but since the purpose of this group was to show a cross-section of Hopiland, the unity of the whole was sought in one perspective. This unity of perspective between the foreground and the canvas is designed to carry the eye over from the real objects in the foreground to the canvas in the distance, to the end that one may feel the great open landscape of the Hopi Indian's habitat. In this particular the artists have been successful. The specimens in the Hopi cases adjoining the group and the illustrations in books give a wealth of detail as to the multiplicity of pueblo life, but they cannot in anyway take the place of a visit to Walpi where one may see things in their perspective and native color. The very highest praise that could be bestowed upon this group was a remark by a visitor, "It is almost as good as a trip to Hopiland." This was the ideal of its construction.

The success of this group has been sufficient warrant for proceeding with a second one. At the outset it was planned to have three large Southwestern groups to which the architecture of the hall readily lends itself. In the center where the Navajo hogan now stands is to be one for the Navajo, showing a typical habitation, a family at its daily routine, and the landscape setting; while within the hogan, visible through the open door, a ceremony with its beautiful sand painting. On the left is the Hopi group now in place and on the right the Apache group now under construction. Mr. McCormick has the canvas background mounted and almost entirely painted in. Work upon the foreground and the reproduction of an Apache grass-covered shelter are under way. Mr. Young is now among the Apache in New Mexico modeling the human figures.

The general plan of the Apache group is the same as for the Hopi, a dwelling with family group in the foreground and the panorama of the landscape beyond. A definite spot on one of the Apache reservations was chosen for reproduction here so that the finished group will present with fidelity a sample of this tribe's original habitat.



DETAIL OF THE HOPI GROUP

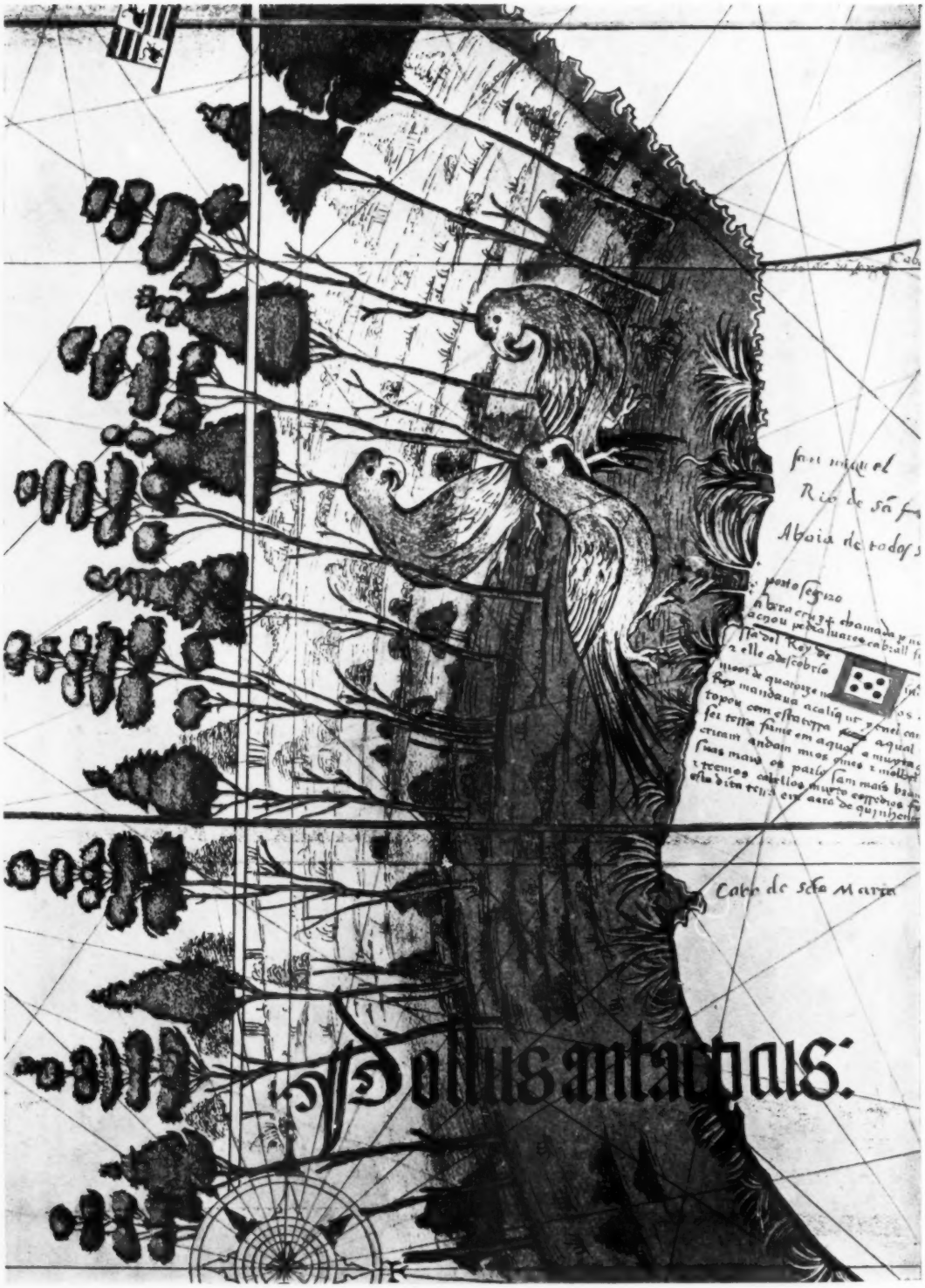
The young mother is rocking her baby by moving the primitive cradle with both feet and hands The curtained door is an indication of a new-born infant within. The old man in the distance is spinning and the man in the middle distance weaving. From the roof hang the dried red peppers so much prized by the Indians and Mexicans of the Southwest

Figure in clay of an old Hopi Indian, modeled by Mahonri M. Young. This figure is seen in the rear of the finished group at the extreme right

The same figure receiving its coat of plaster during the process of making the mold. The casts were made in the Museum's taxidermy shop by Mr. James Bell

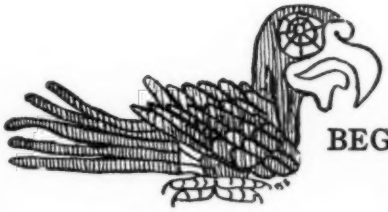
Interior view of a portion of the piece-mold for the figure shown on the preceding page. This is after the plaster put over the clay figure has set and the clay has been removed from within it

A stage in the process by which was obtained the plaster cast of the boy climbing the ladder. A piece-mold of the clay model has been filled with wet plaster which has set in the desired figure. The plaster of the piece-mold is now being chipped away

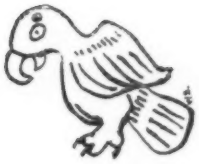


EARLIEST REPRESENTATION OF AN AMERICAN LANDSCAPE

Brazilian forest scene with red-and-yellow macaws, from the Cantino map of 1502. The original, beautifully colored, is preserved in Modena. Harrissi has published a facsimile reprint



BEGINNINGS OF AMERICAN NATURAL HISTORY



By Charles R. Eastman

THE following notes concerning the first mention in literature of various American animals have been suggested by the discussion which has been running in *Nature* during the past twelve-month concerning early references to the opossum and kangaroo. The article may serve as a sequel also to one on "The Beaver Group" by Dr. F. A. Lucas, in the JOURNAL of the American Museum for March, 1913, and to two or three that have appeared in *Science* and *Popular Science Monthly*, by Dr. E. W. Gudger, on early Brazilian natura'ists.

It is surprising how rapidly information accumulated regarding the natural history of the New World directly after its discovery. Columbus himself, a voluminous writer, is proved by his Journal and letters to have been a keen observer of the strange aspects of nature and man in the regions discovered by him. To the Admiral we owe the first account of the alligator, iguana, hutia, manatee, native dog of the West Indies, and numerous species of birds, trees and plants. The letter of Dr. Chanca, who accompanied Columbus, and those of Vespucci[1] are also full of interesting natural history details.

[1] Vespucci's first letter (1497) was republished in facsimile by Varnhagen in 1893, having for frontispiece a design by Stradanus dating from about 1580, in which various South American animals are represented. Mention occurs in this letter of the iguana, puma and ocelot from the coast of Tampico. Dr. Chanca's letter has recently been translated and edited by Fernandez de Ybarra, in *Smithson. Misc. Coll.*, 1906, and *Journ. Amer. Med. Assoc.* for same year.

Cut at the left above, macaw after pre-Columbian Maya codex; at the right, Central American parrot, as shown in Maya codex.

As early as 1504 there was published in Venice a little collection[2] of voyages entitled *Libretto de tutta la Navigatione de Re de Spagna, de la Isole et Terreni Novamente Trovati.* The matter in this Libretto was taken over into the famous *Paesi Novamente Retrovati*, a larger collection edited by Fracanzio da Montalboddo, and printed in 1507, '08, '13 and '19. In the *Libretto* and also in this second collection are found the first printed description of the opossum.

The *Oceani Decas* (Decade of the Ocean) of Peter Martyr was published in 1511, and this and succeeding Decades are enlivened by interesting digressions on the natural history of the new continent. Here occurs the first mention in literature of the potato and the earliest recognizable description of the tapir. This author's statement that a live opossum, captured with her litter by the Pinzons in 1500, was exhibited in Granada, Spain, is confirmed by a Latin inscription which accompanies a figure intended to represent this animal in the Waldseemüller world-map of 1516, and in three succeeding editions of Ptolemy's *Geography.*

A reproduction of a portion of the map known as *Tabula Terre Nove* in the Ptolemy of 1522 showing this same figure and a Brazilian cannibal scene, is given by Edward Everett Hale in Winsor's *Narrative and Critical History of America* (vol. ii, p. 598). Gesner and Topsell also take their illustrations of the so-

[2] Peter Martyr is thought to have been the author of the Latin original, and Angelo Trivigiano the translator and editor of this pioneer work.

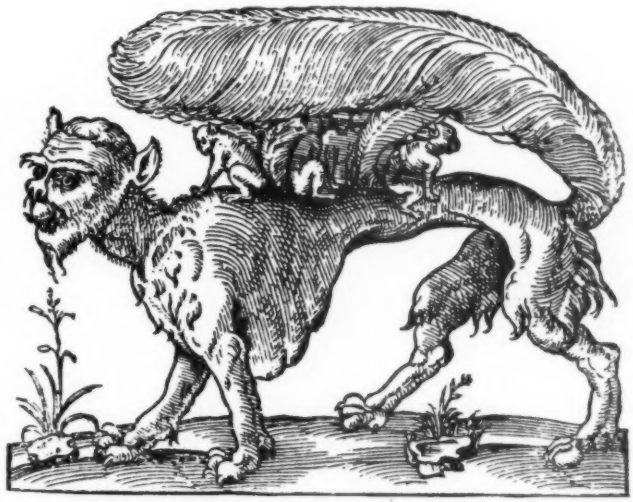
On the right, a Brazilian banquet; to the left, an opossum with brood-pouch. This is the earliest known figure of an American marsupial. [From Waldseemüller world-map of 1516]

called *Simivulpa*, in reality the opossum, from the same source. In later South American cartography, a figure of the tapir, but with long, drooping ears, is often substituted for that which does service for the opossum, and in the Blaeu map of 1605 the latter is introduced into the region that is now known as Argentina. In the same map a drawing of the "Su," originally placed in the region of the La Plata, is shifted to the North American continent, in Nova Francia. The first illustration and description of this fantastic creature, which is in reality merely a caricature of the common opossum, is found in the work published by André Thevet in 1558, entitled *Singularitéz de la France Antartique*. Thevet's figure is copied by Conrad Gesner in his *Historiae Animalium* (1620), both in the text and title-page. Gesner, Topsell and Jonston also copy Thevet's bizarre representation of the three-toed sloth (*Bradypus tridactylus* L.).

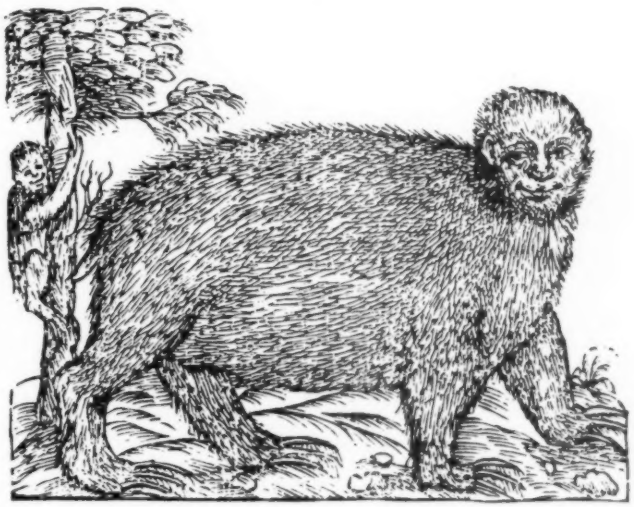
In connection with the figures that are here given of the "Simivulpa" and "Su," (*i. e., Didelphis*), which are taken from Thevet's work of 1558, we may quote Topsell's descriptions of these creatures, as given in the English Gesner (1658): *Of the Simivulpa, or Apish Fox.*

Those which have travelled the Countrey of Payran [Parana], do affirme, that they have seen a four-footed beast, called in Latin, *Simivulpa*, in Greek, *Alopecopithecos*, and in German, *Fuchssaffe:* in the forepart like a Fox, and in the hinder part like an Ape, except that it had mans feet, and ears like a Bat, and underneath the common belly, there was a skin like a bag or scrip, wherein she keepeth, lodgeth, and carryeth her young ones, until they are able to provide for themselves, without the help of their dam; neither do they come forth of that receptacle, except it be to suck milk, or sport themselves, so that the same under-belly is her best remedy against the furious Hunters, and other ravening beasts, to preserve her young ones, for she is incredibly swift, running with that carriage as if she had no burthen. It hath a tail like a Munkey: there was one of them with three young Whelpes taken and brought into a ship, but the Whelps died quickly: the old one living longer was brought to *Sivill*, and

afterward to *Granado*, where the King of *Spain* saw it, which soon after by reason of the change of aire and incertainty of diet, did also pine away and die. The like things doth *Cardan* report of a beast called *Chiurca*, in *Hispania Nova*, and *Stadinius* of a *Suruvoy* in *America*: but I conjecture that the former is this Fox-Ape called in Greek, *Alopecopithecos*, and of the Germans *Fuschsaffe*, the latter the Female *Cynocephal*, which carryeth her womb wherein lie her young ones without her belly."



Opossum and family on the march. This slender-waisted creature is called by Thevet and others the "Su," and characterized as a ferocious and ravenous beast. [From Thevet's "Singularitez," 1558]



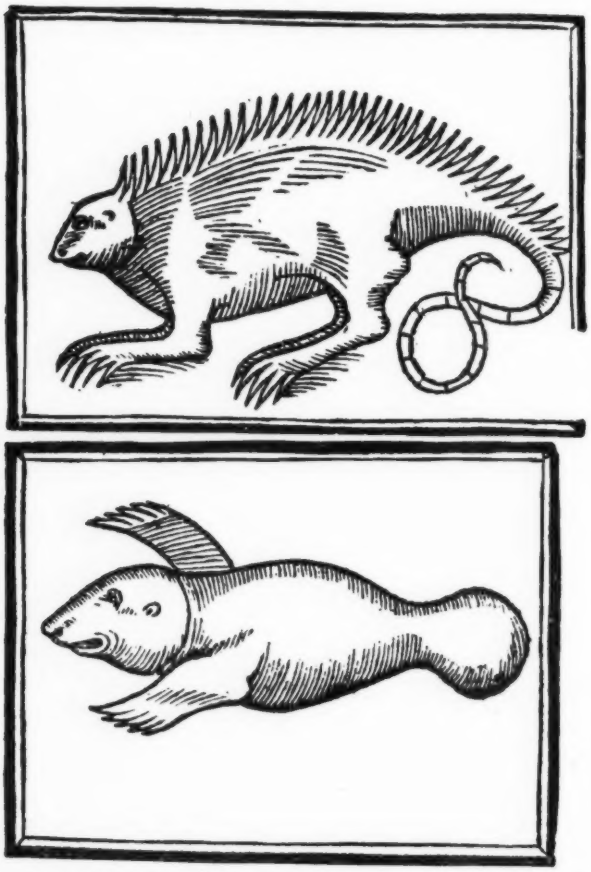
This amiable-looking creature (three-toed sloth) is called by Thevet "the Haut." The human-like expression is not wholly imaginary, being somewhat characteristic of the young sloth. (From Thevet, 1558)

Of a Wilde Beast in the New-found World called Su.

"There is a Region in the New-found World, called *Gigantes*, and the Inhabitants thereof are called *Pantagones;* now because their Countrey is cold, being far in the South, they clothe themselves with the skins of a Beast called in their own tongue *Su*, for by reason that this Beast liveth for the most part neer the waters, therefore they call it by the name of *Su*, which signifieth water. The true Image thereof as it was taken by *Thevetus*, I have here inserted, for it is of a very deformed shape, and monstrous presence, a great ravener and untamable wilde Beast. When the Hunters that desire her skin set upon her, she flyeth very swift, carrying her young ones upon her back, and covering them with her broad tail: now forsomuch as no Dog or Man dareth to approach neer unto her, (because such is the wrath thereof, that in the pursuit she killeth all that cometh near her:) the Hunters dig several pits or great holes in the earth, which they cover with boughs, sticks, and earth, so weakly that if the Beast chance at any time to come upon it, she and her young ones fall down into the pit and are taken.

This cruel, untamable, impatient, violent, ravening, and bloudy beast, perceiving that her natural strength cannot deliver her from

the wit and policy of men her hunters, (for being inclosed, she can never get out again,) the Hunters being at hand to watch her downfall, and work her overthrow, first of all to save her young ones from taking and taming, she destroyeth them all with her own teeth; for there was never any of them taken alive; and when she seeth the Hunters come about her, she roareth, cryeth, howleth, brayeth, and uttereth such a fearfull, noysome and terrible clamor, that the men which watch to kill her, are not thereby a little amazed, but at last being animated, because there can be no resistance, they approach, and with their darts and spears wound her to death, and then take off her skin, and leave the carcass in the earth. And this is all that I finde recorded of this most savage Beast."



Above, the iguana; below, the manatee, or sea-cow. Both figures are from Oviedo's *History of the Indies*, 1535, and are the earliest known representations of these animals

Peter Martyr, as already remarked, gives the earliest and at the same time a very satisfactory account of the tapir. The next writer after the "Father of American history," as this author has been called, to describe the tapir is the bachiller Enciso, whose '*Suma de Geografia*', was first published at Seville in 1519. In 1526 Gonzalo Fernandez de Oviedo published the *Sumario*, or epitome of his comprehensive history, and in chapters twelve and twenty-two of the shorter work are to be found excellent descriptions of the tapir and armadillo. The earliest printed figure of the armadillo is found in the *Exoticorum* of Clusius or L'Escluse (1605), in which work are also found figures, based upon original observation, of the sloth and manatee. De Laet in his *Novus Orbis* (1633), and George Marcgrav[1] in his justly famous treatise on Brazilian natural history (1648), both copy the figure given by Clusius of the rare three-banded armadillo.

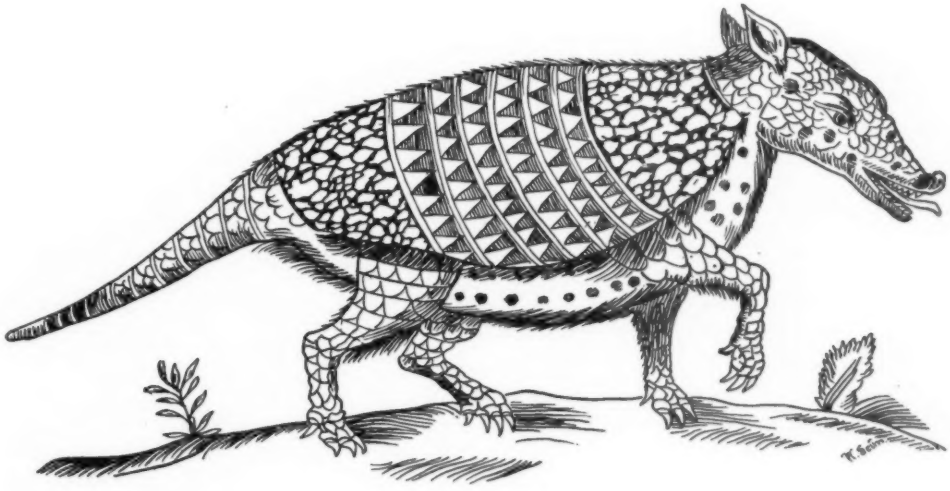
[1] There have been published, by Martius and Lichtenstein, excellent commentaries on the plants and animals of Brazil which were described by George Marcgrav and Wilhelm Piso under the editorship of De Laet in 1648, and the same service was performed by Lichtenstein for the Mexican quadrupeds described by Francisco Hernandez in the Latin edition of his *Historiæ Animalium* published in 1628. (*Abhandl. Akad. Wiss.* Berlin 1827, pp. 88–127. See also earlier volumes for Marcgrav). On Hernandez and his works, see O. Rich, *Books relating to America*, pp. 72–74, and Joseph Sabin, *Bibliotheca Americana*, vol. viii, pp. 239–241. The commentary by Martius, the Munich botanist, is found in *Abhandl. k. bayer. Akad.*, 1853, vol. vii.

Marcgrav, Nieremberg and Jonston also copy Clusius' somewhat fanciful representation of the three-toed sloth, called the Ignavus, Ai or Haut, and in Spanish the *perillo ligero*.

The compendium of Oviedo, published in 1526, was followed in 1535 by his larger work, of which a modern reprint exists, entitled *Historia general de las Indies*. Another work having the same title, by Francisco Lopez Gomara, was first printed in 1553, and passed through several editions. Both these works, excellent in their way, contain much valuable information concerning the aborigines, and animal and plant life of the southern continent and the West Indies. Gomara gives the earliest known figure of the buffalo, or American bison, and Oviedo is the first author to represent the iguana and manatee. Under the native designation of "Anta," two Patagonian animals appear to have been indicated by Gomara. One of them is pretty certainly the guanaco, and the other is conjecturally identified by M. Roulin, in his *Mémoire sur le Tapir* (1835), as the guemul or huemul deer.

Concerning the guanaco, this creature was first seen by Magellan in 1519, in the vicinity of the straits that bear his name. The earliest mention of this animal, of the rhea, penguin and fur seal as observed in Patagonia, occurs in the narrative of Antonio Pigafetta,[1] who accompanied the famous navigator on his voyage around the world. It was near the Straits of Magellan that the guemul deer was first seen by Captain Wallis. In early accounts this animal was confused with a supposed equine species, first scientifically described by Molina under the name of *Equus bisulcus*, and represented in the Chilean coat-of-arms

[1] It is there mentioned that the Patagonians, whom the voyagers encountered at Port St. Julian, were clothed with the "Skinne of a Beast sewed together," and that "This Beast (as it seemed unto us) had a large head, and great eares like unto a Mule, with the body of a Camell, and tayle of a Horse." In the relation of Olivier van Noort's voyage (1598), it is stated that at Port Desire they "found Beasts like Stagges and Buffals." The first English navigator to take detailed notice of this ruminant appears to have been Wood, in the narrative of his *Voyage through the Straights of Magellan* (1670).



This gayly caparisoned creature is meant by Aldrovandi (1637) to represent the nine-banded armadillo. Enciso described it a century earlier, and Bélon and L'Escluse gave good figures

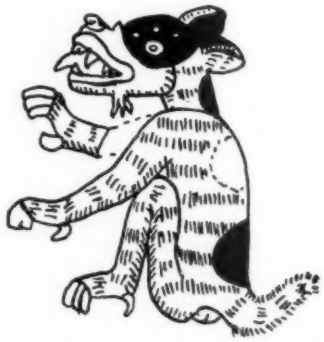
The seal, somewhat conventionalized by Van Brussel, and passing under the guise of "sea-lion" (1799)

as of equine shape.[1] It is interesting to note that the figure of a horse is introduced by Sebastian Cabot in the Argentine region of his world-map of 1544, but this can scarcely be construed as evidence that native wild horses were seen by that navigator anywhere in South America. This view is, however, maintained by Señor Anibal Cardoso in a recent memoir in the *Anales of the Buenos Aires Museum* (vol. xv, 1912) on the origin of Argentine horses.

In regard to the elephant-seal, Dr. R. Lydekker is authority for the statement that our first definite, if not actual, knowledge of this animal seems to have been derived from a specimen brought to England by Lord Anson in 1744 from the island of Juan Fernandez; and also from the figure and account given in the *Voyage Round the World* of that great commander, where the species is called "sea-lyon." It is, however, certain that Dampier in 1684, and Peter Kolben in 1705, also described the same creature (*Macrorhynchus leoninus* L.). The former writes:

> The Sea Lion is a large Creature about 12 or 14 foot long. The biggest part of the Body is as big as a Bull: It is shaped like a Seal, but 6 times as big. The Head is like a Lion's Head; it hath a broad Face with many long Hairs growing about its Lips like a Cat. It has a great goggle Eye, the Teeth 3 Inches long, about the bigness of a Man's Thumb....They have no Hair on their Bodies like the Seal; they are of a dun colour, and are all extraordinary fat."—*Voyages*, cap. iv.

Very important for the west coast of South America is Cieza de Leon's *Cronica del Peru* (1553). The Amsterdam edition of this work (1554) contains a fair illustration of the llama, an animal of the existence of which Europeans first became aware as early as 1513, through Balboa's intercourse with the Aztec chieftain Tumaco. Members of the llama race, of edentates, and many of the more characteristic Central and South American birds, mammals and even tropical vegetation, are represented with considerable fidelity in early sixteenth century cartography of the west-



Not a griffin, but a harmless spotted dog, represented in pre-Columbian Maya codices

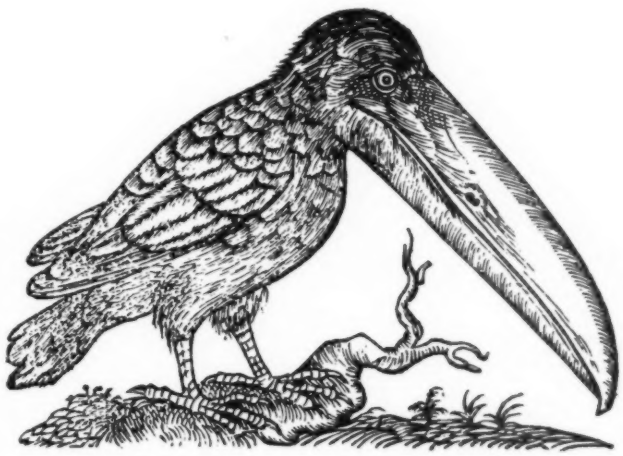
[1] The most recent notices of this large mammal, *Hippocamelus bisulcus*, are those by J. A. Allen, in the Report of the Princeton Patagonian Expedition (1906), and M. Neveu-Lamaire and G. Grandidier, in *Les mammifères des hauts plateaux de l'Amérique du Sud* (1911). Lydekker gives a colored plate of the guemul in *Proc. Zool. Soc. London*, 1899.

ern hemisphere. A real service to science, as well as to the study of history and geography, has been rendered by Dr. E. L. Stevenson, in his facsimile reprints of sixteenth and seventeenth century world maps published under the auspices of the Hispanic Society of America.

It will suffice to mention at this point the names of several authors who treated more or less extensively the natural history of the New World during the latter half of the sixteenth century. The figures and descriptions of South American animals given by André Thevet in his *Singularitéz de la France Antarctique* (1558), and by Jean de Lery, in his *Voyage en Brazil* (1578), were freely made use of in a number of later compilations, one such being the *Historia Naturæ* (1635) of Juan E. Nieremberg, a Jesuit professor at Madrid. Another was a *History of the Indies*, in Latin, published at Florence in 1588 by the Jesuit Father Giovanni Maffei, who had access to the archives in Lisbon. Many interesting notices are to be found in *La Historia del Mondo Nuovo* (1565), by the Italian traveler Girolamo Benzoni; also in the collection of voyages and travels published by Ramusio in 1556 and 1565, and in the "Observations" (1593) of the famous English freebooter, Sir Richard Hawkins. The following extract on the chinchilla may serve as a specimen of Sir Richard's natural history notes:

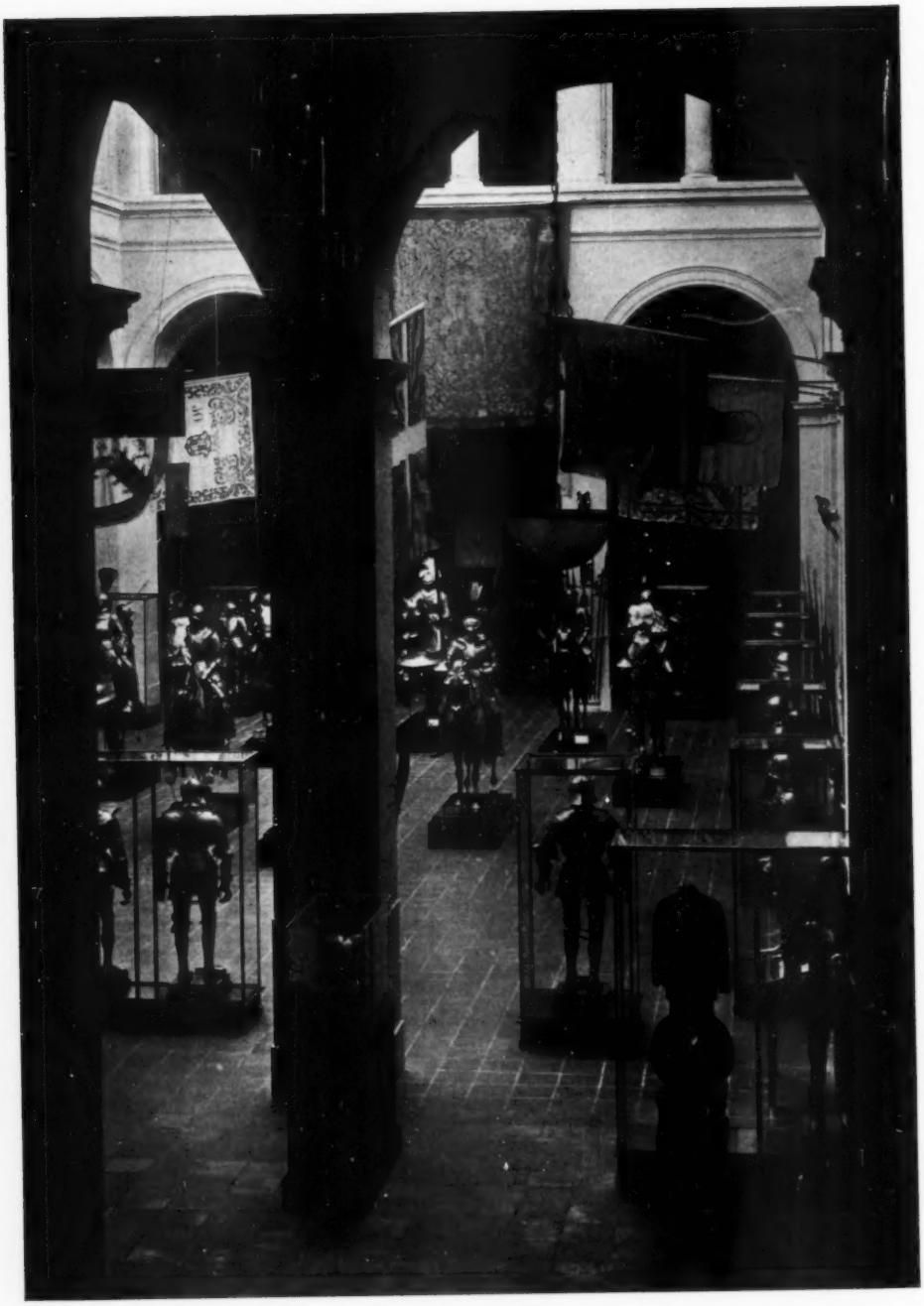
> Amongst others [the Chileans] they have little beastes like unto a squirrell, but that he is gray; his skin is the most delicate soft and curious furre that I have seene, and of much estimation (as is of reason) in the Peru; few of them come into Spaine because it is difficult to be come by; for that the princes and nobles laie waite for them. They call this beast *chinchilla*, and of them they have great abundance.

More important from a scientific standpoint and more trustworthy than any of the minor writers just mentioned are the works of the two Spanish chroniclers José de Acosta and Antonio de Herrera, who wrote toward the end of the sixteenth and beginning of the seventeenth century respectively. The Jesuit historian de Acosta (1590) would seem to have been the first writer to notice the chinchilla, and he refers particularly, as do also Cieza de Leon and Garcilasso de la Vega, to the bones of fossil mammals found in the Campo de los Gigantes (Savanna of Bogota). Similar remains were also noted in Mexico by Francisco Hernandez, whose *Historiæ Animalium* (1628) remained for a long time in manuscript before being finally edited and published.



Barring the feet, which are crow-like, not a bad idea of a Brazilian toucan, Rhamphastus. [From Thevet's "Singularitez," 1558]

[Article to be concluded in December *Journal*]



A GLIMPSE AT THE MARVELOUS ARMOR COLLECTION IN THE METROPOLITAN MUSEUM OF ART

EVOLUTION OF ARMS AND ARMOR

By Bashford Dean

As is well known there is in progress a considerable agitation of the question of the use of armor in the present European war. Many military experts advocate it, as well as armor experts such as Dr. Bashford Dean. They have in mind of course the hand to hand conflicts of trench warfare and the similar duel character of the fighting now going on in the Balkans. Dr. Dean considers it fair to believe that suitable armor would save the lives of hundreds of soldiers and that a single soldier properly armored would be the equal of many unarmored soldiers in trench warfare. He advises not only the shield, headpiece and corselet suggested by Sir A. Conan Doyle, but also groin and hip plates to give additional protection from schrapnel and spent balls. Any armor to be efficient against the high explosives of to-day must be of hardened steel, smooth, highly polished and in form as roundly curved as possible. Thus more frequently the bullet will glance off instead of penetrating. Dr. Dean's article calls attention to the marvelous armor collection recently put on exhibition at the Metropolitan Museum of Art in New York City, which gives an opportunity for the study of armor historically, and for a comparative study relative to the fitness of armor for practical service at the present time.— THE EDITOR.

"HAPPY is the man," wrote Horace, "who can know the causes of things." We may to-day differ as to how the word "happy" is best defined, still we may each and all agree that there is a wholesome satisfaction in being able to apply widely and practically some "causal" principle of nature which we have discovered — often at the cost of labor and suffering. Let us take as an instance the principle which we call evolution. The zoölogists of the past half century have demonstrated the great truth that the beings of to-day have changed to a greater or less degree from their ancestral form and habit; and this "law" has already been the means of revising helpfully many of our ideas, not in biology alone but in various lines of human thought and enterprise, including science, theology and art. Thus in science we may now trace an evolution even of the solar system, in theology we can work out the genesis of a sect, and in art we are given the means of explaining step by step the development of an ornament or a style. And it is extraordinary how much Horatian satisfaction we get from being able to explain the causes or origin of things — even of everyday objects and the least of them, such as the position of buttons on our coat sleeve, or the colored lights in an apothecary's shop.

At first sight of course, one may say, how may we justly apply to all of these *things* the principle which prevails in *living creatures*. Creatures, says one, change because they vary in nature. Two fishes are never quite alike, nor even two peas in a pod, and in time these variations become more pronounced for some obscure cause or another, until the descendant in the thousandth generation is quite unlike his forebear. But in living beings the changes are *genetic*, passed along from father to son. How then may this principle be used to explain the happenings of *things* which are not kith or kin?

Truly this is a question not easy to answer. In certain cases however, the changes are all so clear that the objects have only to be placed in line to show that there has been happening a kind of evolution. When we turn the matter over in our minds we may explain the evolutional side of it all by showing that the things have developed because of real evolutional changes which took place in or were directed by neighboring organized beings. For instance we could certainly describe the evolution of the stomach in the series of backboned animals if we but knew what that organ had produced, secreted or excreted, from the beginning. Why therefore should we be surprised if, when we collect things

which arise from the age-long operation of brain and hand, we should find that these products are, so to say, genetic, and may be arranged in evolutional series? This is the thought, I believe, which explains why we may group objects in gradational lines which give us considerable satisfaction. For everyone dislikes confusion, and no little confusion can be dissipated by groupings of this kind.

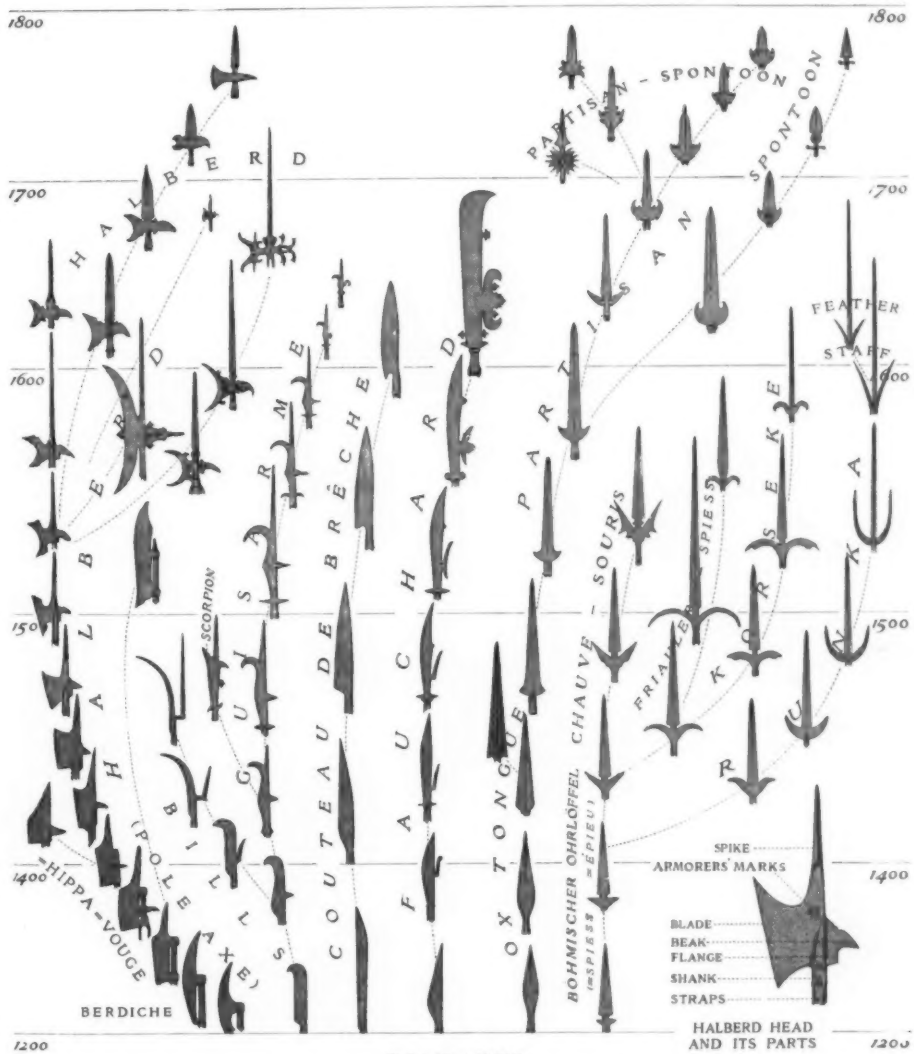
If, then, we examine among ancient arms a large collection of shafted weapons, with all their curiously outlined halberds and pikes, we find that they fall readily into series. If the collection contains specimens which date back throughout a number of centuries it becomes quite easy to arrange them in a "pedigree." In this, scores of kinds of these arms, which bristle at first sight in confusing array, can be reduced to half a dozen "types" which are clearly "ancestral." These picture in their earliest forms agricultural implements, such as axe, pruning-hook and scythe, suggesting the times when common soldiers were farmers and fought with whatever they had at hand. In these early times the only real pole-arm (*i. e.* both for hunting and warfare) was a spear.

Out of these simple types (*generalized* as we would call them in zoölogy) arose *advancing series*, with new structures appearing, culminating, disappearing, just as they occur in the history of shells or beasts. Note for example the advancing evolution of such a structure as the beak of a halberd. In the beginning it was not a part of the halberd blade, but a separate hook of metal, like the tongue of a buckle, which encircled the wooden handle of this arm. Then, too, in our series we find *decadent lines:* Thus the spontoons which sergeants carried in our War of Independence (and which our state law declares must still be carried!) were nothing but degenerate survivors of ox-tongue partisans; or the tiny guisarmes and dwarfed halberds of the seventeenth century were but the crudely made followers of the magnificent and serviceable arms of the preceding century. In these three cases degeneration was accompanied with reduction in size. In another case however, decadence was expressed in just the opposite way (as sometimes happens in animals) as in the doge's ceremonial fauchard of 1650–1700, a titanic arm, so large that it could hardly be carried comfortably, let alone be used — even when it was formed of a sheet of metal, instead of being a well-modeled and functional blade. These forms were "gerontic," as a naturalist would say.

It is interesting too, in such a series of forms to see how a structure changed its function and was thereby "stimulated" to great evolutional progress; just as we know that such a condition causes far-reaching effects in animals, as when a protective scale begins to function as a weapon, or a gill-cleft comes to help out the ear. As an example of this, observe the ancient spear with lappets at its base, which originally served to keep a wounded animal (or man) at a safe distance, so that it could not "run up" the spear. When these lappets were found of use for inflicting additional wounds they grew steadily in size (for about two hundred years) and developed all manner of unwholesome hooks and prongs, and in the latest types (feather-staves) could in fact be folded together and concealed within the handle, which thereupon masqueraded as a harmless walking staff, until the owner, swinging his "feather-staff," shot out again the long sharp points. Another example of change of function appears in the blade of a halberd. This was originally ax-shaped, with cutting margin long, heavy and convex; such a margin then became

steadily reduced in size during a couple of centuries. About 1500 it became uniformly concave and lost its chopping function. It was then simply a double beak which was used as a pick, or at need served as a grappling hook when lances were to be pulled down or when a wall was to be clambered up.

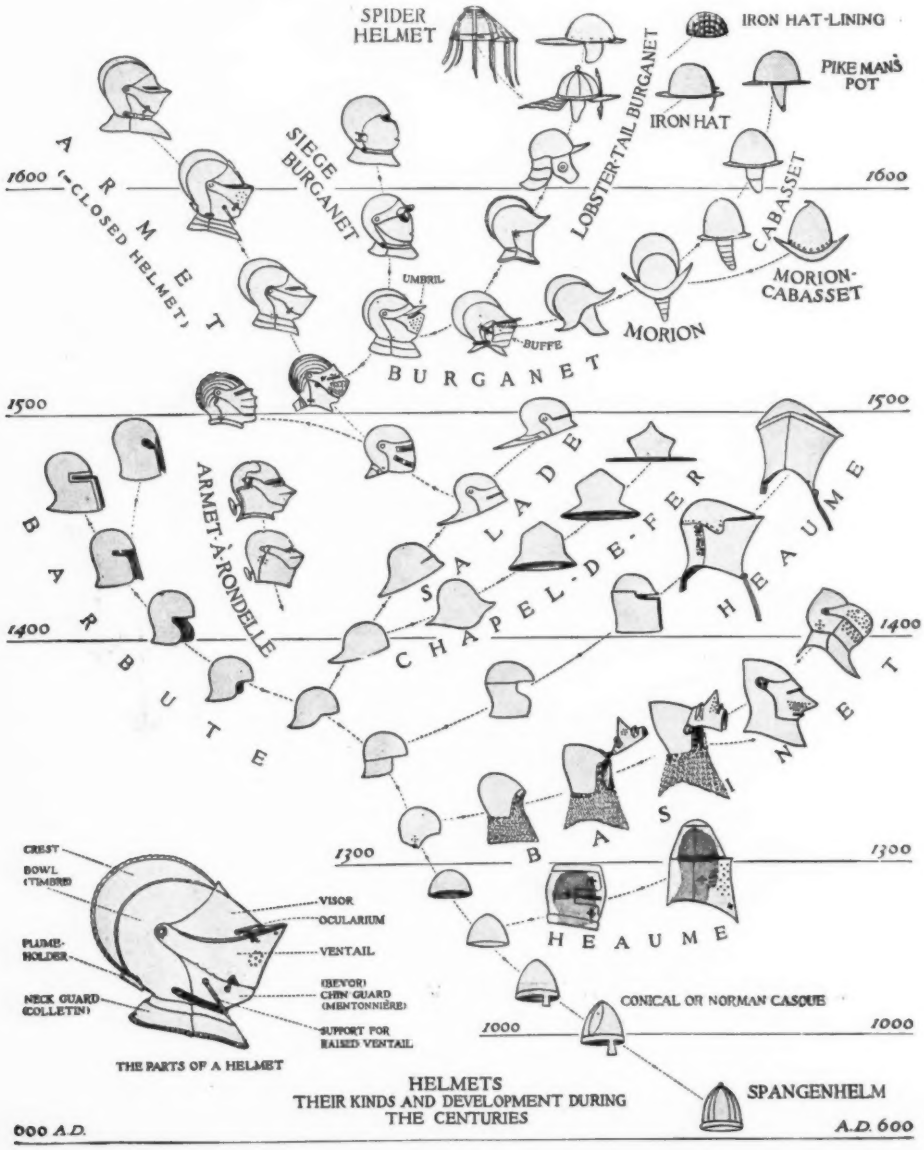
Again, among our arms, highly specialized forms were common, just as we find everywhere animals which were curiously developed in certain directions, as when their teeth were suited only for a special kind of food. Such forms, we find too, did not long survive, dying out just as our specialized animals do, *e. g.* when their particular kind of food gives out. As an instance of this we may note the billhooks which were common in England in the fifteenth century. In their



POLE ARMS
THE DEVELOPMENT OF THEIR COMMONER FORMS
DURING THE CENTURIES

BASHFORD DEAN DIR. STANLEY J. ROWLAND DEL.

early form they were serviceable heavy axes with a hook-shaped end and a stout prong at the side. From this form were developed shapes which were very long and very narrow — the cutting blade suggesting a surgical knife and the prong at the side becoming a huge needle twenty inches in length. Now it is remarkable that this highly specialized type was used only toward the close of the Wars of the Roses when knights were armed "to the proof" with the most complete and efficient armor which the world has seen. Its plates could no longer be crushed, hence the heavy ax-head of our earlier pole-arm gave place to the long-bladed incurved knife which might be slipped neatly between the plates, say of shoulder, knee or elbow, and inflict a dangerous wound. So too this specialized billhook lost its stout beak or pick, for this could no longer be



pounded through the plates of gothic armor, but became long and slender, needle-like in form. By such a point, chain mail could be pierced, that is, because of the length and shape of the weapon it was best equipped mechanically to break a single ring in the knight's collar of chain mail, which otherwise was "proof." The fact that this type of bill did not long survive is interestingly accounted for by the changes which soon took place in knightly armor, for the collar of mail was subordinated to plate, and the huge elbow and knee pieces of gothic armor, which were easily "caught" by the incurved and inslipping blade, appeared in use only for a few years.

If we study progressive changes in helmets, again we see generalized forms in the earliest times. Thus at the very beginning, the helmet was built of many pieces of iron and was a form much easier to make than a casque beaten out of a single piece of metal[1] — the latter type of headpiece appearing only after armorers' experiments had stretched through several hundred years. In our present series we see again highly specialized forms as in the terminal members of the "lines" of war hats (*chapel-de-fer*), barbutes and fifteenth century heaumes. In the first of these the brim of the hat became so wide that the headpiece could not be kept safely in place; in the second the expense of making it was extreme and it proved troublesome in the neck region; in the third the weight and size became excessive, and it disappeared as speedily as a highly developed variety in jousting went out of style.

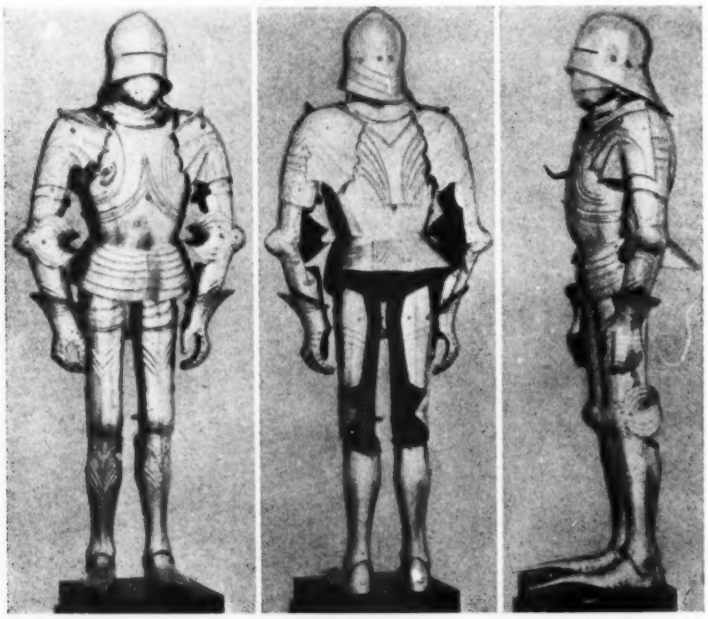
An advancing line in an evolutional series of helmets is seen in the closed helmet, or armet, which arose from the bowl-shaped helmet or salade and gave rise to many kinds of burganets, morions and cabassets. The evolutional fertility of the armet appears to have been based upon several factors, such as the close modeling of the helmet to the head, enabling it to be kept readily in place, coupled with the invention that a separate visor and a separate chinpiece could be made to rotate from single lateral pivots — the latter adjustment of a great advantage since it made the headpiece easy to put on and take off. As a case of "convergence," or "parallelism" in an evolutional series of helmets we may mention the form of closed helmet called *armet-à-rondelle* which suggests the usual armet but which was not closely kin to it, and did not survive because it lacked convenience in manipulation. Thus in order to remove this casque the visor had first to be raised, then the cheek plates had to be separated from a peg at the point of the chin. By the time the wearer, cumbered with his mitten-shaped gauntlets succeeded in detaching the cheek flaps below, he might find that his visor would fall and cause him annoying delay. Another parallel to the closed helmet of the sixteenth century was the basinet in the late fourteenth century. It never led directly to the armet however, and had evident defects in its mechanism which cause it to be ranked as a "terminal" rather than a progressive form.

In a series of helmets we have, again, decadent or degenerate forms. Thus in the line of closed helmets the latest examples have lost their tall crests, their modeling, the separate plates in the neck region, even the catch which clamps the chinpiece down (in the place of the last we find merely a strap and a buckle). Also in siege burganets one finds obvious cases of degeneration: crest vanishes, visor and umbrel disappear and their

[1] In all these cases we leave out of account armor and arms of Classical Antiquity: these were, with so much else of early culture, lost from the sight of the Middle Ages.

ancient pivot is replaced by a simple hinge. These casques are exceedingly heavy and admirably designed to protect the wearer from gunshot at close range. They could be used in the trenches in Flanders even to-day very much as they were used in the days of Marlboro. Their utility in fact is clearly shown in the present revival of armor-wearing. The helmets to be finally noted are numerous degenerate and "rudimentary" forms descended from the lobster-tailed burganets of Cromwell's times. Thus the ear defense in such a headpiece loses its lower portion, which was a part of the neck guard, and later becomes greatly reduced in size; also the neck-covering portion of the back of the casque develops either a great number of strips, or else, merging them all together, becomes a single plate — which finally may disappear altogether. Such a headpiece had an interesting series of degenerate successors.— One of them is hat-shaped, another becomes a skullcap enclosed within the crown of a felt hat, another persists as a lighter hat lining made of a few wide bands of metal, still another assumes the form of a grating made of light strips, and a final one appears as a light hat lining made of a few strips or bars of metal so hinged together that the whole defense can be folded and carried in one's pocket.

It is especially significant in the various instances noted above that the changes always take place *in order of time*, just as we find evolutional changes occurring in animals. Thus we are no more apt to meet the highly modified burganets of the seventeenth century among casques of the sixteenth century than we are likely to find fossil mammals in the old red sandstone. On the other hand, we may learn of archaic forms of helmets or halberds persisting for a long time, as we find the pearly nautilus or the gar pike, living to-day, which might well have died out with their kindred ages ago. Thus as an amusing case of survival, we read of knights from Ireland appearing in Queen Elizabeth's court armed in basinets and chain mail, nearly two centuries behind the English style.



TSIMSHIAN STORIES IN CARVED WOOD

By Lieutenant George T. Emmons

THE Kitksan as well as the other divisions of the Tsimshian possess neither letters nor hieroglyphics, yet through the plastic and graphic arts they have been enabled to preserve and illustrate their legends, traditions and much of their life history.

Carving in wood, bone and stone, weaving in the wool of the mountain goat, in maple and cedar bark and spruce root show a much higher degree of development than painting. The last has never advanced beyond simple outline with no sense of perspective and with four simple colors, consequently little variation in shade or tone.

Cruder and more primitive than either the Tsimshian proper or the Niska, the Kitksan nevertheless follow natural forms with wonderful accuracy, and besides portraying the typical features of their race, they express action in animal figures — born no doubt of that close study of nature upon which the hunter's life depends. Their art is more realistic than conventional, but as it has been developed slowly through generations a certain amount of usage prevails which is the more noticeable in the human, bear and mythical animal figures.

Without discussing the origin of the Kitksan, the fact that their art has been borrowed from the coast cannot be questioned, for the reason that there are found more than two hundred miles inland in the midst of birch and cottonwood forests, sea animal forms emblematic of the family crests that have come to them through intercourse and intermarriage with the seaward divisions of this people. Besides, all their folk-lore and traditions speak of a migration down the Skeena to salt water, and a further proof is that the contiguous Déné tribes are wholly wanting in any sense of art.

Some of the finest specimens of carving are said to have been executed by Tsimshian imported for the purpose, but the average work represents home talent, and while often archaic, is more realistic and original and interesting in the portrayal of local traditions and the fauna of the country than the finer carving.

At the village of the old Kitzegukla on the Skeena River, some thirteen miles below Hazelton, is a very interesting heraldic column of the Kish-hasht family. It is rather crude in its execution but it illustrates more than the usual number of stories. The tree is simply barked and brought to a dull point at the top. Below this occurs in order representations of, first, the mountain goat painted white and black; second, the sun within which is the figure of the moose hunter, Kuke-shan, carrying a small basket; third, the monkey woman Pighish, and at the base the big horned owl (gwuk-gwu-nooks).

These stories told in wood go back to the time when men and animals were supposed to be very close to one another; when they intermarried and saw each other under a spell of witchery that made all appear human, except that the animals wore coats of fur which they could at will remove and appear in human form, or put on and become as animals.

THE STORY OF THE MOUNTAIN GOAT

(These stories were told by John Malo, an old Kitksan at Hazelton, June 20, 1913. They are prosaic but typical native explanation of a totem pole, similar to the many on exhibition in the American Museum)

In the early days of life, before the great cold which caused the dispersion of the

Four stories illustrated in carved wood on a heraldic column

Kitksan, when the whole tribe lived at Tumlahalm on the upper Skeena River, there was a great hunter, Kit-um-gieldo (man of the outside or wilds). He was chief of the Kon-nah-da clan, whose hunting grounds included Sthe-yordan-lah (steep sides), the precipitous aggregation of jagged mountain peaks that rise directly from the comparatively level country beyond the mouth of the Buckley River. After the salmon season was over, when the animals had fattened on the abundance of the summer and had taken on their winter coats, he invited the most active hunters of the village to accompany him to the great mountain where the wild goats were abundant, for besides the flesh which was esteemed, the skins were used as bedding, the soft wool was twisted into yarn for weaving blankets, into cord for carrying bags and other household articles, while the leaf fat that had been taken on as a protection against the extreme cold of winter was run into cakes for later use.

The goats were hunted with bow, arrow and spear, the hunters lying in wait for them along their rock-worn trails, and many were taken each year and sent down the mountain side to the people who were encamped awaiting the hunters' return. Then the meat was carried across the river to the village and a great feast was held.

During one of these expeditions a young man put a bag of red paint in his wallet, to color his arrows for good luck, and after he had killed many goats he came across a kid which he caught and after painting its horns red and decorating its face in ceremonial design, he let it go. The following spring two strangers dressed in white blankets arrived in the village and as was the custom with guests, they were invited to the chief's house and offered food such as dried salmon, boiled dried goats' meat and dried berries, but they would not eat anything. They gave all the people an invitation to visit their village, not saying where it was, but offering themselves as guides. After leaving the house some children noticed the strangers on their hands and

knees eating grass like animals, but they did not mention this to the people at the time.

The following morning at an early hour the villagers assembled and led by the visitors, crossed the river and climbed the mountain until they reached what appeared to be a broad level expanse where stood a large feast house. This was a delusion, however, they were really on a narrow rock shelf — for the people were under the spell of the mountain. Around the house were platforms of broad planks which overhung steep precipices, and their hosts who appeared as human beings in their white blankets were in reality mountain goats.

The people were feasted and then the chief, their host, began to dance, singing a strange song of his people: "I am shaking my hoofs over the mountain side," and they saw the rock open and close again, which they could not understand.

When night came they were given sleeping places on the platforms around the house, the chiefs on the lower ones and the common people on those above. The hosts, however, took their places on the inner sides and placed the guests on the outer edges, except in the case of the hunter who the previous year had caught the kid and painted its horns red. To him came a young man whose face was decorated in red, who asked him to share his sleeping bench with him, and he alone was placed on the inner side of the platform.

In the night when all were sleeping, the goat hosts pushed the sleepers off into space and all were killed except the young hunter who had painted the horns of the kid, who in truth was his host and protector in human form.

When he awoke and found his friends gone he was very sad, for he saw that he was on a narrow rock shelf of the mountain side in a place inaccessible to man. But his protector took off his shoes which seemed to be hoofs and putting them on the hunter's feet he told him that with them he need have no fear, that he could jump from shelf to shelf with perfect safety. Also he told him to take them off when he reached the level ground and put them in a certain place where he could find them.

When the young hunter reached the base of the mountain he found the bruised dead bodies of all who had accompanied him to the feast and only those were left who had remained in the village.

THE STORY OF THE MOOSE HUNTER

The great moose hunter, Kuke-shan (expert in gambling with the sticks) traveled great distances in search of game but after hunting a moose and killing it, he took only the paunch which he filled with blood. This he boiled down into a thick soup which was considered a great luxury.

He was continually thirsty because he traveled far and fast and he cautioned his wife always to have water baskets filled when he was expected to return — and these he emptied at once.

During one of his trips the wife neglected to go for water, and when he was returning she heard him shouting for water. In her confusion she answered "No water!" as she grabbed the baskets and hurried to the spring. Then he was carried up to the Sun and his voice grew fainter and fainter until it was lost in the distance, for he was a child of the Sun and was always thirsty, and he could live on earth only as long as he could find plenty of water. He can be seen in the Sun, but no one must look at him because he may throw down blood from the paunch which he carries, and thus cause hemorrhage and fatal sickness.

THE MONKEY WOMAN, PIGHISH

Besides having a knowledge of the animals common to the country, the Kitksan held a general belief in mythical beings half human and half animal that lived in the depth of the forest, the inaccessible mountain tops and the waters. Such beings had been seen in early days by certain individuals, and in most instances the meetings had been productive of great good fortune. Representations of these beings had been assumed as crests and their supposed likenesses were displayed on heraldic columns, as well as upon ceremonial dress and paraphernalia.

Pighish, who was seen first by one of the Kish-hasht clan, was an animal closely associated with the land otter, although very human in appearance, and spoken of to-day as a monkey woman. The presence of Pighish was indicated by the cry of a child,

for she always carried on her back a small being much like herself.

Only one without fault could see this miraculous creature, and when the voice called, he was obliged to follow as the sun goes around four times; then he would come to Pighish. He then must take the child, which immediately appeared to be human. The mother then pleaded for her infant and it was returned to her, whereupon she agreed to grant any wish asked. In returning the child, the face of the person had to be turned away as he stepped back, lest Pighish kill him with her long claws.

This spirit is identical with the property women of the Haida and the Tlingit of the Coast.

AN OLD LEGEND OF THE GREAT HORNED OWL

There are many stories about the great horned owl (gwuk-gwu-nooks) but the one mentioned most often is in connection with the theft of children. One of the oldest of these legends, like that of the mountain goat, goes back to the days of Tumla-halm.

During the winter season of extreme cold when the great communal houses were untenantable, the people occupied very small log structures — low, shedlike and chinked with moss.

In one of these was a family including a little boy who cried continually. He was wrapped up in his rabbit-skin blanket and put to bed, but he would get up and crying go to one and another until the father said "If you do not stop the owl will take you." Finally he went to the grandmother sleeping near the door, and when she pushed him away, the door opened and in truth the owl came in and carried him off.

In the morning his family missed him, but they could hear his faint crying, so they searched far and wide but without any success. Then they commenced digging in the ground, and from this incident the collection of winter huts below the main village received the name "An wurghash" (place where they dig). Finally the father took down his bow and quiver and putting some goat's suet and red ochre in his bag, he set out through the woods. He had gone but a short distance when a grouse flew up from the trail and lit in a tree. Fitting an arrow to the bow the father was about to shoot, when the grouse cried, "Do not shoot for I will tell you of your lost boy, but first say if you have any goat's fat and red paint in your wallet and will you paint red on my eyes?" This he did and the grouse said, "How nice I look now! Go right ahead and you will see a big nest of twigs in a great spruce and in it is your boy." The father reached the tree and climbing up found the boy asleep wrapped in his rabbit-skin blanket. This was the owl's nest, and the owl had been feeding the child on live snakes, frogs and worms, telling him they were rabbits' entrails. These ate through the child's stomach and he finally died and his body was burned.

In the fall of the year when the water was low and the barricade and salmon traps bridged the river, the villagers heard someone calling from the opposite shore, and soon they saw the owl which appeared more like an old woman. As she came to the bridge, she sang, "Was it you that raised the child and took it away?" The father told some little boys playing about to pull out some of the foot boards and place dead sticks across so that any weight would break through. After doing this they called to the owl to come over knowing that she would press hard on the foot boards, and as she attempted to cross she broke through and fell into the river. As she floated downstream she came to a camping-place where children were hooking salmon. When they saw her they brought her to shore, but soon being frightened they ran away. Then she called, "Come back my grandchildren and dry me." They built a fire and wiped her feathers dry, when she became very vulgar in speech and they angrily threw her into the river and she was drowned.

EXPLORING A SPUR OF THE ANDES

By Leo E. Miller

THAT lofty spur of the Andes jutting out of the Western Range slightly below altitude 7° is known by the name Paramillo. To explore this section was the object of the expedition's leaving its base at Medellin on January 14, 1915, with equipment sufficient for about three weeks' actual field work.

The very good trail strikes toward the northwest, ascending the mountain side rapidly, so that four hours after starting we had reached the top of the range. A great cleft forms a natural pass, 8750 feet high, and saves a climb of at least an additional thousand feet. The slope on the other (western) side is more gentle.

We were immediately impressed with the barren nature of the country, for with the exception of a few patches of low brush and the clumps of withered grass, no vegetation was to be seen; and an occasional glimpse of the Cauca River far below suggested the picture of a broad yellow ribbon lying upon a brown rocky plain.

That night we reached a small town called San Geronimo (elevation 3200 feet). Near the town small patches of ground are irrigated with water brought from mountain brooks and distributed through a network of artificial ditches. In these spots rice, corn and pasturage grow, although rather scantily on account of the rocky nature of the soil.

Next morning we were on the road before six. A few hours later, on crossing the top of a small ridge, we came suddenly upon the town of Sopetrán completely hidden in a fertile little valley filled with palms, mangoes, and other beautiful trees. The cluster of some hundreds of neat white houses with red tile roofs, the well-kept streets, and the multitude of birds fluttering among the deep green foliage render Sopetrán quite the most attractive town of its size I have seen in tropical America.

At noon we reached the Cauca and crossed that sluggish, muddy stream on a well-built suspension bridge probably eight hundred feet long. Gravel banks flank the sides of the river, and bare sandy islands divide its waters. The elevation at this point is approximately two thousand feet. One league beyond the Cauca lies the town of Antioquia, altitude 2600 feet. The valley of the Cauca is here five to ten miles wide, rolling, and supports no vegetation except occasional clumps of mimosas and cacti which rather add to its desert-like appearance. The high ranges of the Western and Central Andes hem it in like huge walls of pink clay and sandstone.

We reached Buriticá January 16. Immediately after leaving Antioquia, a mere ledge of a trail begins the ascent of the Coast Range, and while a good deal of anxiety was felt for the safety of the two cargo animals, it was nevertheless a relief to escape from the intolerable heat of the low country. The altitude of Buriticá is 6200 feet.

On account of the jaded condition of the animals, we spent the morning of January 17 at Buriticá. Leaving at noon, we reached a small settlement known as Tabocal, altitude 5400 feet, at five o'clock. We could now no longer see the Cauca, our view having been shut off by a ridge of mountains several thousand feet in height which rises out of the valley between the ridge we were on and the river. A slight change was perceptible in the character of the country; extensive acres covered with low brush dotted the otherwise barren landscape, although far apart; and on the extreme tops of both ranges a thin fringe of green could be distinctly seen.

Beyond Tabocal the country is extremely broken, there being frequent rises and descents of two thousand feet. Several separate mountains, not connected with the main ranges, stand here and there like huge monuments, rising from a basal elevation of three thousand feet to eight or nine thousand feet, which naturally magnifies their already tremendous proportions.

Late in the afternoon of the eighteenth, we reached an altitude of eight thousand feet, and entered a fine strip of forest, the first we had seen since leaving Medellin. This is the beginning of the forested zone, which examination showed to be at an equal height on both the Central and Coast Ranges, and to continue to the tops, which appear to rise to an altitude of nine thousand feet or more.

The night was spent at an Indian hut called La Meseta, altitude 7900 feet just below the forest belt, and situated in the midst of an extensive strip of maize. Peque, the end of the

At one time on the way to the Paramillo, camp was made at an altitude of 10,000 feet after a climb of 5000 feet in eight hours. After leaving this camp the expedition was without water for two days

journey by mule, was reached at noon on the nineteenth. After leaving La Meseta the trail goes down abruptly; the town has an altitude of only five thousand feet. Peque boasts of about fifty decaying mud huts, and its population is mostly of Indian descent, including some pure-blooded Indians. One of the latter, Julian David, received us most cordially and rendered us every possible assistance in securing the porters for the ascent of the Paramillo.

Some of the country surrounding Peque once doubtless bore a light forest growth, with heavier forest in the ravines; but by far the greater part is naturally bare or covered with a dense growth of brush. I was told that at the time of the Spanish Invasion, forty thousand Indians inhabited this region; and as the several mountain streams supply an abundance of fresh water and its soil responds fairly well to cultivation, there seems to be no reason why it should not have supported an extensive population.

The forest zone, beginning at La Meseta at eight thousand feet, gradually extends its limits downward as we go farther north, until at Peque it reached as low as five thousand feet in the deeper and well-watered ravines; and as previously reported, at Puerto Valdivia, it reaches the very edge of the Cauca.

We secured four half-breed porters to carry the equipment and as there was no trail to the Paramillo, a fifth man was engaged to go in advance and clear an opening with his machete. On the twenty-first we started at six in the morning, following a short trail that led to a lonely hut known as El Madeiro. This three hours' walk took us through country covered with large areas of tall brush, blackberry briars and guavas, with occasional patches of forest, some of which had recently been burnt.

Arriving at El Madeiro (eight thousand feet), we plunged into the magnificent forest, going in a due westerly direction. It was our plan to follow along the top of an undulating ridge, which one of the men said was the shortest and easiest route. He knew from experience, having once visited that region some sixteen years before. It was during the course of a revolution; his father was pursued by the opposing forces and fled into the forest, taking his son, then a small boy with him, and eventually reaching the Paramillo where they spent some time.

At first the forest was fairly penetrable, but soon it assumed the character of the well-known San Antonio (above Cali) jungle, being composed of a solid wall of moss, ferns, creepers and epiphytes which burdened every tree-trunk and branch. Many birds, such as wood-hewers, yellow-headed tanagers, parrots and blue-throated jays were observed, among them a number of species common at Santa Elena.

On account of the long climb, we made camp at three o'clock, at an altitude of ten thousand feet, having ascended five thousand feet in eight hours' marching. Water was obtained in a ravine over one thousand feet lower down on one side of the ridge, and I may here add that this was the only water we had

until reaching the Paramillo, so that we went nearly two whole days without drinking.

The second day's march we had hoped would be over a gentler slope; but it was soon discovered that our ridge was composed of a succession of knolls rising from five hundred to one thousand feet above the mean level, and the forest grew denser constantly. We had to cut practically every foot of the way. In places we actually walked over the top of the masses of vegetation; the branches were a solid tangle of creepers, climbing bamboo, bromelias and mosses, and formed springy aërial bridges. More often it was easier to burrow through, and frequently "tunnels" many yards long were cut, through which the carriers crawled on hands and knees. The tops of some of the hills were void of trees, their place being taken by a dense growth of grasslike bamboo, wild oleanders, thick-leaved shrubs, and thickets of a tall, coarse grass with leaves eight feet tall and six inches wide.

Half-breed porters to carry the expedition's equipment. It was the duty of one to go in advance and clear an opening through the forest with his machete. In some places every foot of the way had to be cut; in others the party actually walked over the tops of the vegetation, a solid tangle of creepers, climbing bamboo, bromelias and mosses, which formed springy aërial bridges

A LOFTY SPUR OF THE ANDES

The Paramillo (Antioquia, Colombia) is composed of a series of sharply inclined peaks, the highest reaching an elevation of 13,000 feet, interspersed with ravines and deep fissures. The mountain sides are covered with typical paramo vegetation, frailejones, blueberry bushes and tough grass, with moss-grown bushes and stunted trees in the ravines. Birds were scarce and extremely wary — finches, honey creepers, tapacolos, cotingas and flycatchers, hummers, towhees and tanagers

We camped this night at 11,350 feet up. The men eagerly cut down clumps of bromelias hoping to obtain water, but all that the leaves contained were a few drops of a liquid mud, utterly unfit for use. Although we traveled steadily for ten hours, I doubt if we covered more than three miles.

A few hours after starting on the morning of January 23, we emerged suddenly from the dark forest. Instead of the tall, overburdened trees, there were extensive areas of bushes, evergreens, stunted pines, and plants with thick, round rubbery leaves, interspersed with clumps of tall rank ferns. Beyond stretched the bleak, wind-swept surface of the Garam.

The Paramillo region is composed of a series of sharply inclined peaks, the highest of which attains an elevation of thirteen thousand feet, interspersed with ravines and deep fissures. The surface consists mainly of dark sandstone which in many places has been shattered so that a thin litter of the particles covers the fundamental rock. Occasionally a thin vein of white quartz crops out, especially where, as often occurs, the strata stand in a perpendicular position. Water is scarce. We discovered but one small, trickling brooklet; but at the bottom of one of the crevices several potholes were found, each containing several hundred gallons.

At night the temperature fell to 28°, and ice formed in our pails half an inch thick; in the morning the ground was white with frost. The vegetation is of a typical paramo character, consisting of low clumps of frailejones, blueberry bushes and tough grass. In the ravines grow thick bushes and stunted trees, all heavily moss-covered.

Birds were extremely scarce and, strange to say, exceedingly wary. The typical slaty finch of Santa Isabel and two species of honey creepers were by far the commonest, followed by a small, slaty tapacolo. Then there were white-throated hummers and flycatchers. The finches (including goldfinches), honey creepers, tapacolos, cotingas and flycatchers, seem to belong strictly to the paramo; the hummers, towhees and tanagers it seems come only from the forests below.

It is difficult to guess just where this typical paramo bird fauna originated. On all sides excepting a break toward the west, Paramillo is surrounded by ridges, some reaching an elevation of 12,000 feet, the tops of which are covered with dense forest, so that it stands like a mountainous brown island amid the sea of green.

MUSEUM NOTES

SINCE the last issue of the JOURNAL the following persons have become members of the Museum:

Patron, MR. JOHN H. PRENTICE;

Life members, MRS. ADRIAN HOFFMAN JOLINE, MRS. JOHN MAGEE, DR. J. V. LAUDERDALE and MESSRS. GEORGE D. BARRON, RUSSELL J. COLES, ALFRED M. COLLINS, LEE GARNETT DAY, JOHN W. MERCER and R. G. PACKARD, JR.;

Sustaining member, MRS. N. M. POND;

Annual members, MRS. W. H. BUTTON, MRS. E. BRUNSWICK, MRS. LILLIAN M. CHARLES, MRS. K. D. CHENEY, JR., MRS. CHARLES DOUGLASS, MRS. JOSEPH HERZIG, MRS. GEORGE LEARY, MRS. JOSEPH LOEWI, MRS. WILLIAM MITCHELL, MRS. C. W. PIERSON, MRS. HORACE F. POOR, MRS. ELEANOR ATKINSON READ, MRS. GEORGE S. RING, MRS. HOWARD C. SMITH, MISSES CONSTANCE GRIGGS and ANNA L. SLATER, DR. JOSÉ D. ALFONSECA, DR. GEORGE H. SEMKEN, DR. JULES A. VUILLEUMIER, DR. B. W. WEINBERGER and MESSRS. JOHN AITKEN, ALBERT B. ASHFORTH, FREDERIC D. BARSTOW, HENRY G. BARTOL, PAUL BAUMGARTEN, RICHARD A. CARDEN, ALBERT HEYMANN, GEORGE S. HOYT, VINCENT LOESER, M. R. MAYER, PHILIP AINSWORTH MEANS, CARL SCHURZ PETRASCH, HENRY M. RAU, MAX ROSENBERG, CHARLES SALOMON, FRANCIS UPHAM STEARNS, S. H. STONE, C. J. STUBNER, LAMBERT SUYDAM, JR., HERBERT SYRETT, HARRY TIPPER and a membership in memoriam to MR. ANDRÉ C. CHAMPOLLION.

IN accordance with resolutions taken by the First Pan-American Scientific Congress, meeting in 1908 at Santiago, Chile, a Second Pan-American Congress will be held in Washington, D. C., in December, 1915, under the auspices of the United States Government. Through the courtesy of the Pan-American Union the offices and sessions of the Congress will be located in the Pan-American building and the Director-General of this organization will act as Secretary-General of the Congress. The purpose of the Congress is to foster the cordial relations existing between Pan-American countries and to give a broader acquaintance with current progress in education, public health, international law, antiquity of man, conservation of natural resources and all branches of scientific research. At the recent invitation of the Secretary-General, the American Museum appointed as official representatives, Dr. Frank M. Chapman, delegate and Dr. Herbert J. Spinden, alternate.

THE one hundred and third meeting of the National Academy of Sciences of the United States of America will be held in New York City, at the American Museum of Natural History for three days in November beginning the fifteenth.

On Monday, the first day, a lecture will be given in the auditorium by Dr. Michael Idvorsky Pupin, of Columbia University, on "The Problem of Aërial Transmission," to be followed by a general reception in the hall of the Age of Man. On Tuesday morning, Tuesday afternoon and Wednesday morning, public scientific sessions will be held in the west assembly hall of the Museum at which various short papers will be read. Among those scheduled are: — "The Nature of Cell Polarity," by Prof. Edwin G. Conklin of Princeton University; "Heredity of Stature," by Dr. Chas. B. Davenport of the Carnegie Institute, Cold Spring Harbor, New York; "Origin of the Gall Midges," by Prof. E. P. Felt of the Geological Hall, Albany; "Fossil Calcareous Algæ from the Panama Canal Zone," by Prof. Marshall A. Howe of the New York Botanical Garden; "Recent Explorations in the Cactus Deserts of South America," by Dr. J. N. Rose of the Smithsonian Institution; "Can we observe Organic Evolution in Progress?" by Dr. Herbert Spencer Jennings of John Hopkins University; "A Suggested Explanation of Orthogenesis in Plants," by Prof. John M. Coulter of the University of Chicago; "The Life of Radium," by Dr. Bertram B. Boltwood of Yale; "The Colorimeter as an Interpreter of Life Processes," by Prof. Graham Lusk of the Russell Sage Institute of Pathology; "The Solar Radiation and its Variability," by Charles G. Abbot of the Smithsonian Astrophysics Observatory; "Interference of Light Waves of Slightly Different Length," by Prof. Carl Barus of Brown University; "The Influence of Certain Minerals on the Development of Schists and Gneisses," by Dr. Charles R. Leith of Wisconsin University; "Glacial Sculpture of the Mission

Range, Montana," by Prof. W. M. Davis of Harvard; "Crystallization of Quartz Veins," by Waldemar Lindgren of the United States Geological Survey.

President Henry Fairfield Osborn of the American Museum, will speak on "The recently mounted skeletons of Tyrannosaurus and Ornithomimus in the American Museum of Natural History." He will describe the two extremes of carnivorous dinosaur adaptation which these specimens respectively represent. Dr. Frank M. Chapman, curator of ornithology at the American Museum, will read a paper on "The Distribution of Bird Life in Colombia: a Contribution to a Biological Survey of South America," and Mr. C. William Beebe, curator of birds, New York Zoölogical Park, on "The Origin of Flight in Birds."

SINCE Mr. Donald B. Macmillan has not returned from the Arctic in time to present to the members this fall an account of the Crocker Land expedition which he led North in 1913, arrangements have been made to show to members of the Museum on the evening of December 9 the motion pictures secured by Sir Douglas Mawson on the Australasian-Antarctic expedition. A brief account of the expedition and a description of the action of the films, will be given by Mr. George H. Sherwood, curator of education at the American Museum of Natural History. These films give a wonderful picture of the coastal animal life of the Antarctic: penguins, seals, sea-elephants, sea-leopards, snow petrels, cormorants, giant petrels and many other little-known species in apparently limitless number. The violent windstorms and blizzards so common in the Antarctic, and the giant icebergs and towering ice cliffs of that region are strikingly shown in the pictures.

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MUSEUM NOTES

Since the last issue of the Journal the following persons have become members of the Museum:

Patron, Mr. John H. Prentice;

Life members, Mrs. Adrian Hoffman Joline, Mrs. John Magee, Dr. J. V. Lauderdale and Messrs. George D. Barron, Russell J. Coles, Alfred M. Collins, Lee Garnett Day, John W. Mercer and R. G. Packard, Jr.;

Sustaining member, Mrs. N. M. Pond;

Annual members, Mrs. W. H. Button, Mrs. E. Brunswick, Mrs. Lillian M. Charles, Mrs. K. D. Cheney, Jr., Mrs. Charles Douglass, Mrs. Joseph Herzig, Mrs. George Leary, Mrs. Joseph Loewi, Mrs. William Mitchell, Mrs. C. W. Pierson, Mrs. Horace F. Poor, Mrs. Eleanor Atkinson Read, Mrs. George S. Ring, Mrs. Howard C. Smith, Misses Constance Griggs and Anna L. Slater, Dr. José D. Alfonseca, Dr. George H. Semken, Dr. Jules A. Vuilleumier, Dr. B. W. Weinberger and Messrs. John Aitken, Albert B. Ashforth, Frederic D. Barstow, Henry G. Bartol, Paul Baumgarten, Richard A. Carden, Albert Heymann, George S. Hoyt, Vincent Loeser, M. R. Mayer, Philip Ainsworth Means, Carl Schurz Petrasch, Henry M. Rau, Max Rosenberg, Charles Salomon, Francis Upham Stearns, S. H. Stone, C. J. Stubner, Lambert Suydam. Jr., Herbert Syrett, Harry Tipper and a membership in memoriam to Mr. André C. Champollion.

In accordance with resolutions taken by the First Pan-American Scientific Congress, meeting in 1908 at Santiago, Chile, a Second Pan-American Congress will be held in Washington, D. C., in December, 1915, under the auspices of the United States Government. Through the courtesy of the Pan-American Union the offices and sessions of the Congress will be located in the Pan-American building and the Director-General of this organization will act as Secretary-General of the Congress. The purpose of the Congress is to foster the cordial relations existing between Pan-American countries and to give a broader acquaintance with current progress in education, public health, international law, antiquity of man, conservation of natural resources and all branches of scientific research. At the recent invitation of the Secretary-General, the American Museum appointed as official representatives, Dr. Frank M. Chapman, delegate and Dr. Herbert J. Spinden, alternate.

The one hundred and third meeting of the National Academy of Sciences of the United States of America will be held in New York City, at the American Museum of Natural History for three days in November beginning the fifteenth.

On Monday, the first day, a lecture will be given in the auditorium by Dr. Michael Idvorsky Pupin, of Columbia University, on "The Problem of Aërial Transmission," to be followed by a general reception in the hall of the Age of Man. On Tuesday morning, Tuesday afternoon and Wednesday morning, public scientific sessions will be held in the west assembly hall of the Museum at which various short papers will be read. Among those scheduled are: — "The Nature of Cell Polarity," by Prof. Edwin G. Conklin of Princeton University; "Heredity of Stature," by Dr. Chas. B. Davenport of the Carnegie Institute, Cold Spring Harbor, New York; "Origin of the Gall Midges," by Prof. E. P. Felt of the Geological Hall, Albany; "Fossil Calcareous Algæ from the Panama Canal Zone," by Prof. Marshall A. Howe of the New York Botanical Garden; "Recent Explorations in the Cactus Deserts of South America," by Dr. J. N. Rose of the Smithsonian Institution; "Can we observe Organic Evolution in Progress?" by Dr. Herbert Spencer Jennings of John Hopkins University; "A Suggested Explanation of Orthogenesis in Plants," by Prof. John M. Coulter of the University of Chicago; "The Life of Radium," by Dr. Bertram B. Boltwood of Yale; "The Colorimeter as an Interpreter of Life Processes," by Prof. Graham Lusk of the Russell Sage Institute of Pathology; "The Solar Radiation and its Variability," by Charles G. Abbot of the Smithsonian Astrophysics Observatory; "Interference of Light Waves of Slightly Different Length," by Prof. Carl Barus of Brown University; "The Influence of Certain Minerals on the Development of Schists and Gneisses," by Dr. Charles R. Leith of Wisconsin University; "Glacial Sculpture of the Mission

Range, Montana," by Prof. W. M. Davis of Harvard; "Crystallization of Quartz Veins," by Waldemar Lindgren of the United States Geological Survey.

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At a meeting of the Section of Biology of the New York Academy of Sciences in the American Museum on October 11, Dr. A. J. Goldfarb, of the College of the City of New York demonstrated his theory of the physiochemical origin of certain abnormal forms. Dr. Goldfarb showed on the screen his production of double sea-urchin embryos by placing their eggs in certain chemical solutions, which dissolved the fertilization membrane and permitted the eggs to adhere to one another. His experiments would indicate that metabolic derangements may be the cause of the occurrence of similar abnormalities in higher species. He found that the extent of the derangements following partial or complete fusion of eggs was roughly proportional to the area of the surfaces brought into contact.

In the death of Dr. Charles F. Holder, in Pasadena, California, on October 11, this country loses one of its older marine naturalists. Born in Lynn, Massachusetts, August 5, 1851, he early evinced an interest in natural history, and in 1871 was appointed assistant curator at the American Museum of Natural History, to assist his father, who had been associated with the Museum since its inception. Dr. Holder in speaking of his work there said a few years ago: "I remember the opening of the Museum distinctly. I had been on the Florida reefs with my father for years, and had a practical knowledge of marine zoölogy which had whetted my appetite for science, and the gradual unfolding of the collections was a delight." Dr. Holder resigned his position in the Museum in 1875 and soon afterward accepted the chair of zoölogy at Throop College, Pasadena. At the time of his death he was honorary curator of its museum. Dr. Holder was the author of many books and a member of many distinguished scientific societies.

The annual Autumn show of the Horticultural Society of New York was held in the American Museum of Natural History November 4 to 7 inclusive. Chrysanthemums were the feature of the exhibition and among them the enormous bush plants shown by Mr. Adolph Lewisohn of Ardsley, New York, made a striking appearance. One of these, a yellow R. F. Felton seventeen feet in diameter and with fifteen hundred blooms, is the largest ever grown.

Mr. George C. Longley has presented to the Museum the collections of his last winter's archæological work on the Island of Jamaica. They contain two human skulls from limestone caves, and a large number of stone celts, potsherds, and bird, fish, and animal bones. This gift has been added to the very large collection previously presented by Mr. Longley, and will be found on exhibition in the South American gallery.

The collection of fossil mammals, obtained in Alberta by Mr. Barnum Brown, associate curator of vertebrate palæontology at the American Museum, was shipped from Sweetgrass, Montana, on October 27 and is expected to reach New York in November.

A Morïori skull, recently purchased by the Museum, has just arrived from Australia. The Morioris are an aboriginal race from the Chatham Islands, and are spoken of as ancestors of the Maoris.

Miss Mary Cynthia Dickerson, curator of woods and forestry and associate curator of herpetology at the American Museum, attended the celebration of the fiftieth anniversary of the opening of Vassar College as the delegate of the Museum. The inauguration of Henry Noble MacCracken, Ph.D., L. H. D., as President of the College was the occasion for notable addresses by Dr. John Huston Finley, commissioner of education for New York, Dr. George Lyman Kittredge, of Harvard University and President Henry Noble MacCracken. The Pageant of Athena, composed by students of the College and presented under the direction of Miss Hazel Mackaye in Vassar's new out-of-door theatre, represented a very high standard of achievement. A series of moving tableaux pictured phases of the development of woman's intellectual life in the past, "the web of Athena's weaving," from Sappho in the sixth century before Christ to Eleva Lucrezia Cornaro of the seventeenth century after Christ, who was elected to the doctorate of the University of Padua. At the close, after the procession across the stage of the several hundred actors representing the past, there followed many hundred Vassar girls of to-day — presaging woman's intellectual life of the future.

Professor C.-E. A. Winslow has taken up his new work as professor of public health

at the Yale Medical School, New Haven, but in his capacity as curator of public health at the American Museum he will be in New York regularly on Tuesdays.

DR. GEORGE F. KUNZ, honorary curator of gems in the American Museum, has been awarded a gold medal at the Panama Pacific Exposition for his collection of publications on gems. Tiffany and Company, with whose firm Dr. Kunz has long been identified as gem expert, have been awarded the grand prize for their collection illustrating the formation of gems under changing mineralogical and geological conditions. The books and monographs by Dr. Kunz occupy one case of the Tiffany exhibit.

MRS. ADRIAN HOFFMAN JOLINE has recently been elected a life member of the Museum in acknowledgment of her generous contributions to the funds of the Asiatic expedition for the collection of mammals. Major John V. Lauderdale, Surgeon United States Army has also been made a life member in appreciation of his gift to the Museum of a collection of ethnological specimens.

MESSRS. FRANK E. LUTZ and A. J. MUTCHLER spent six weeks of the past summer studying and collecting insects and spiders in Porto Rico. The work was a part of the insular survey being made under the auspices of the New York Academy of Sciences. Considerable territory was covered, especially in the western portion of the island. More than fifteen thousand specimens were obtained.

ON Friday evening, November 19, Dr. G. Clyde Fisher, assistant curator of public education at the American Museum, will lecture to the adult blind of New York City and Brooklyn on "Bird Neighbors and their Homes." The procedure at this and subsequent lectures will differ from that at previous lectures, in that small habitat groups of the birds and their nests will be placed in the entrance hall that the blind may handle them and thus have a definite idea of the birds as they are mentioned in the lecture. The doors will be open for the inspection of birds and their nests at 7.45, the lecture following at 8.15. On December 17, Mr. Ernest Harold Baynes will lecture to the blind on animal life.

THE twentieth free exhibition in the art gallery of the Washington Irving high school, Irving Place, New York, consisted of primitive American textiles loaned by the American Museum of Natural History. Peruvian cloth and weaving implements, and Navajo, Chilkat, Saltillo and Chimayo blankets comprised the exhibit.

A COURSE of lectures open to school children will be given at the American Museum on Monday afternoons at four o'clock, beginning November 1 and lasting through December 6; Wednesday afternoons, beginning November 3 and lasting through December 8; and Friday afternoons beginning October 2 up to and including December 10. A people's course will be given on Tuesday and Saturday evenings in conjunction with the department of education at 8.15 and will continue through December 21.

DR. L. P. GRATACAP, curator of mineralogy at the American Museum, has just returned from a recreative trip of two months over Canada. Traveling from east to west, he enjoyed a rapid survey of the plains of Manitoba, Saskatchewan and Alberta, with some examination of the commercial and economic features of Winnipeg, Medicine-Hat, Calgary and Sudbury, also impressions of the geological developments of the Rockies and the Selkirks.

DURING the past year Mr. Roy C. Andrews has been preparing a monograph on the sei whale (*Balenoptera borealis* Lesson), a fine skeleton of which he secured in Japan during the summer of 1910. Although the sei whale has formed the basis of the summer fishery of the Japanese for some fifteen years, it had never reached the attention of a scientific observer and was supposed not to occur in the Pacific. The forthcoming monograph is the result of collaboration with Professor Hermon von W. Schulte of the department of comparative anatomy of the College of Physicians and Surgeons, New York City, who has made an elaborate study of the soft anatomy of a sei whale fœtus which Mr. Andrews brought from Japan in 1910. This is the first time that the anatomy of any species of large whale has been treated in a monographic form.

THE Garner African Film Company has recently been organized for the purpose of

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sending Mr. Richard L. Garner to Africa to get motion pictures of the native and animal life of that part of the country which he knows so well. He will make especial effort to secure motion pictures of gorillas and chimpanzees. Mr. Garner is well known to the public as the man who years ago made a study in Africa of the language of the gorilla and chimpanzee. The directors of the new company are Mr. Carl E. Akeley of the American Museum, Messrs. Raymond L. Ditmars and H. R. Mitchell of the New York Zoölogical Society and Mr. William C. Glass.

DR. ROBERT H. LOWIE, leaving the Museum early in June, visited the Kiowa to ascertain the character of their military societies, and spent the remainder of June and the month of July with the Hopi of Arizona paying particular attention to their clan and family relationships. He attended the meetings of the American Association for the Advancement of Science and of the American Anthropological Association at Berkeley during August, and was official delegate at the Panama Pacific Exposition, representing the Borough of Manhattan on Manhattan Day.

AMONG important recent additions to the hall of public health in the Museum is a model showing the increased efficiency of the present hospital service at Panama over that of the French period. This model shows a hospital in the French period in care of a Sister of Mercy. Puddles of water were allowed to gather about the ground, and the legs of the beds were placed in cans of water to prevent ants from crawling up. As we now know, yellow fever and malarial fever mosquitoes bred in such accumulations of stagnant water and helped to keep the hospitals well filled. Screens were not used and the ventilation was not of the best. The companion part of the model shows a French hospital, altered to conform to our most modern ideas and knowledge of the relation of insect and disease. A clean, dry cellar, well-kept grounds, screens, increased ventilation and the care of trained nurses serve to change an insanitary, disease-breeding building into the acme of sanitation.

THROUGH the generosity of Mr. Ogden Mills the Museum library has received a copy of the colored edition of the famous *Antiquities of Mexico* by Lord Kingsborough. This monumental work in nine folio volumes, published 1831–48, was originally undertaken by Lord Kingsborough in order to test the theory, then prevalent, that the American Indians were the lost tribes of Israel. He made facsimile reproductions of all native manuscripts from Mexico and Central America then known, including many famous codices of the Maya and the Mexicans; republished many valuable government reports and collected all available evidence bearing upon Mexican civilization. The work contains one thousand plates, colored by hand from the originals, embracing the remains of Mexican picture-writing, architecture and sculpture, thus giving to the world a record of one of the most wonderful civilizations ever known. There are facsimilies of the ancient paintings and hieroglyphics preserved in the royal libraries of Paris, Berlin, Dresden and Vienna; the Vatican Library; the Borgian Museum at Rome; the library of the Institute at Bologna and the famous Bodleian Library at Oxford. To-day this work, containing as it does the only reproductions ever issued of a number of very important native manuscripts, is absolutely indispensable to students of Mexican archæology.

DURING the past summer Messrs. Roy W. Miner and Herman O. Mueller of the department of invertebrate zoölogy of the Museum, investigated the marine coastal fauna of Porto Rico, as a part of the biological survey of that island being made by the New York Academy of Sciences. Headquarters were established at Ensenada on Guanica Harbor through the courtesy of the Guanica Sugar Centrale which furnished many facilities to the expedition. Collecting was carried on in Guanica Harbor and the adjacent portions of the coast, including the outlying coral reefs from Guayanilla Bay westward to Cabo Rojo. This summer's work together with that of last season completes the survey of the entire western half of the south coast of Porto Rico, besides the work already done at San Juan on the northern coast and Mayaguez on the western coast.

THE classification of the shore fishes collected by the Townsend "Albatross" Expedition to Lower California in 1911 is now nearing completion. This work has been done by Dr. Raymond C. Osburn of the New York Aquarium assisted by the Museum's department of ichthyology. The collection includes sixteen new species besides several others which were very little known.

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